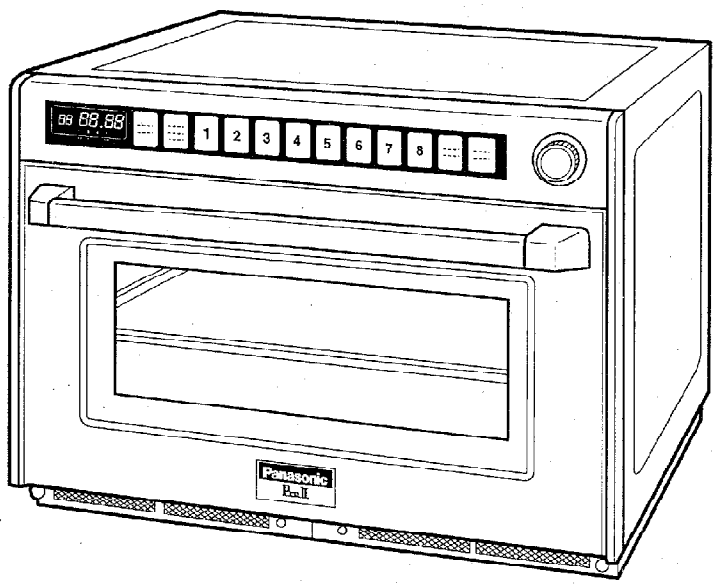
ORDER NO. MOD9612121C1
E10

Service Manual

Microwave Oven

NE-2680R
NE-1780R
(FOR USA)

NE-2780
NE-1880
(FOR CANADA)



Specifications

	NE-2680R, NE-2780	NE-1780R, NE-1880
Power Source :	230/208 V AC Single Phase, 60 Hz	
Power Requirement :	21.7A/24.0A	15.4A/17.0A
High frequency Output :	HIGH ..... 2,700 W (IEC705-88) MED ..... 1,350 W LOW ..... 340 W DEF ..... 170 W HOLD ..... 0 W	HIGH ..... 1,800 W (IEC705-88) MED ..... 900 W LOW ..... 340 W DEF ..... 170 W HOLD ..... 0 W
Oscillation Frequency :	2450 MHz	
Timer :	15 min. ..... HIGH and MED power for single stage. 60 min. ..... LOW, DEFROST and HOLD power for single stage.	
Outside Dimensions :	25-9/16" (W) X 20-3/4" (D) X 18-9/16" (H) 650 mm (W) X 526 mm (D) X 471 mm (H)	
Oven Cavity Dimensions :	21-1/16" (W) X 13" (D) X 9-7/8" (H) 535 mm (W) X 330 mm (D) X 250 mm (H)	
Weight :	136.4 lbs (62 kg)	116.6 lbs (53 kg)
Specification subject to change without notice.		

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

WARNING

1. This product should be serviced only by trained qualified personnel.
2. Though this product has been manufactured in compliance with:
   "Federal Performance Standard 21 CFR Subchapter J" (D.H.H.S.): U.S.A. models
   or "Radiation Emitting Devices Act" (Health and Welfare Canada): Canadian models
   It is very important all repairs should be made in accordance with procedures described in this manual to avoid being exposed to excessive microwave radiation.
3. Check for radiation leakage before and after every servicing according to the "procedure for measuring radiation leakege".
4. If the unit cannot be repaired on site, advise the customer not to use until unit be repaired.
5. Any serviceman who learns of any accident pertaining to microwave radiation leakage including the oven operating with open door should immediately notify the appropriate address listed below and Center for Devices and Radiological Health, DHHS.

IN U.S.A. (PASC)	Panasonic Services Company 50 Meadowland Parkway, Secaucus, New Jersey 07094 Attention: Technical Service Division. (201) 348-7000	IN PUERTO RICO (PSC)	PSC San Gabriel Industrial Park 65th Infantry Ave. Km.9.5. Carolina, Puerto Rico 00985 (809)750-4300
		IN CANADA (PCI)	Panasonic Canada Inc. 5770 Ambler Drive, Mississauga, Ontario, L4W2T3 (905) 624-5010

6. There are special components used in the microwave oven which are important for safety. These parts are marked with a ⚠ on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent microwave leakage, shock, fire, or other hazards. Do not modify the original design.

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(A) Do not operate or allow the oven to be operated with the door open.
(B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary:
   (1) Interlock operation
   (2) Proper door closing
   (3) Seal and sealing surfaces (arcing, wear, and other damage)
   (4) Damage to or loosening of hinges and latches
   (5) Evidence of dropping or abuse
(C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, waveguide or transmission line, and cavity for proper alignment, integrity and connections.
(D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
(E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

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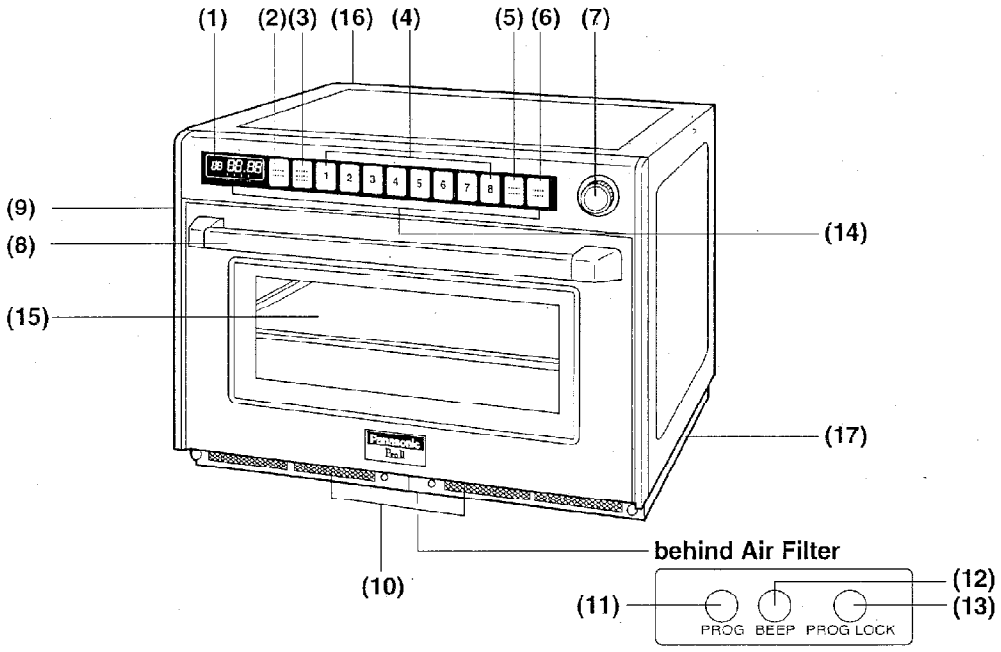
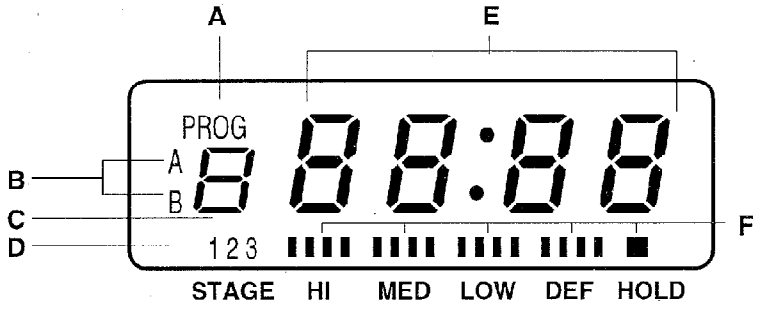
CONTROL PANEL



(1) Digital Display Window(see below)
(2) Power Level Selector Pad
(3) Memory Shift Pad
(4) Memory Pad
(5) Stop/Clear Time Pad
(6) Start Pad
(7) Timer Dial
(8) Door Handle
(9) Oven Lamp Cover
(10) Air Filter
(11) Program Entry Button (behind Air Filters)
(12) Beep Control Button(behind Air Filters)
(13) Program Lock Button(behind Air Filters)
(14) Control Panel
(15) Middle Shelf
(16) Voltage Adjustment Cover (rear side of the oven)
(17) Rating Plate Location

Digital Display Window Indicator Locations



A—Program Display
B—Memory Code Display
C—Memory Pad Number Display
D—Stage Heating Indicator
E—Heating Time Display (min.sec.)

F—Power Level Indicator
HI(HIGH)
MED(MEDIUM)
LOW
DEF(DEFROST)
HOLD

OPERATION PROCEDURE

1. Manual heating for single stage

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Open the door. Place a water load in the oven and close the door.	0
3. Tap [POWER] pad once. (Set to High power)	0 1 HI
4. Set the desired heating time by turning the timer dial. (Set to 2 minutes)	2 00 1 HI
5. Tap [START] pad.	1 59 1 HI
6. When the time is up, you hear 3 beeps sound.	0
7. Open the door and take out the water load. The display goes back to previously setting time.	2 00 1 HI
8. Close the door. 1 minute later, display will return blank.	

2. Manual heating for 2nd or 3rd stage

OPERATION	DISPLAY
1. Follow step 1 to 4 for single stage.	2 00 1 HI
2. Tap [POWER] pad twice. (Set to MED power)	0 1 2 MED
3. Set the desired heating time by turning the timer dial. (Set to 1 minute)	1 00 1 2 MED
4. Tap [START] pad. (1st stage)	2 59 1 2 HI MED
5. When the 1st stage time is up, you hear 1 beep sound. (2nd stage)	59 2 MED
6. When the time is up, you hear 3 beeps sound.	0
7. Open the door and take out the water load. The display goes back to previously setting time.	3 00 1 2 HI MED
8. Close the door. 1 minute later, display will return blank.	

NOTE: For a 3rd stage heating cycle, select a further power level and time between steps 3 and 4 above.

3. Memory setting for single stage

OPERATION	DISPLAY
1. Display must be blank before programming can begin. Touch (PROG) pad.	PROG
2. Tap [5] pad. (Set to memory pad 5) NOE: Previously selected power and time will appear.	PROG A 5 1
3. Tap [POWER] pad once. (Set to High power)	PROG A 5 1 HI
4. Set the desired heating time by turning the timer dial. (Set to 1 minute)	PROG A 5 1 1:00 HI
5. Touch (PROG) pad again.	PROG A 5 1 1:00 HI
6. 3 seconds after, the display window will go blank.	

TO PROGRAM MEMORY AREA B: Follow steps 1 above. Touch the Memory Shift pad [A►B] and a small "B" will appear beneath the flashing "PROG".
Touch the memory pad you wish to program, and the previously selected time and power level will appear in the display window

NOTE: Once the Memory area B has been selected it cannot be changed back to Memory area A. If you do not require Memory area B, cancel it by touching the cancel pad and begin again.

4. Memory setting for 2nd or 3rd stage

OPERATION	DISPLAY
1. Follow steps 1 to 4 for memory setting for single stage.	PROG A 5 1 1:00 HI
2. Tap [POWER] pad twice. (Set to MED power)	PROG A 5 1 2 0 MED
3. Set the desired heating time by turning the timer dial. (Set to 2 minutes)	PROG A 5 1 2 2:00 MED
4. Touch (PROG) pad again. Heating time is displayed by adding single and 2nd stage heating time.	PROG A 5 1 2 3:00 HI MED
5. 3 seconds after, the display window will become blank.	

NOTE: For a 3rd stage heating cycle, select a further power level and dial in a time, between steps 3 and 4 above.

5. Memory pad heating

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Open the door. Place a water load in the oven and close the door.	0
3. Tap 5 pad.	PROG A 5 1 2 3 00 HI MED
4. Tap START pad. (1st stage)	PROG A 5 1 2 2 59 HI MED
5. (2nd stage)	PROG A 5 2 1 59 MED
6. When the time is up, you hear 3 beeps sounds.	0
7. Open the door and take out the water load.	0
8. Close the door. Display will return blank after 1 minute.	

NOTE: When program is locked, heating can be started automatically by tapping memory pad.

6. To Read the Cycle Counter

OPERATION	DISPLAY
1. Open the door and close.	0
2. While pressing (BEEP) switch, press (PROG) switch. The display shows the number of times the oven has been used.	66 66
3. 3 seconds later, the display will go blank.	

NOTE: Total cumulative number includes programming memory heating and manual heating number of times has been used. Cooking times over 99,999 times will be back 0.

7. To Activate Program Lock

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle. Do not open the door.	
2. Press and hold (PROG LOCK) switch until the display show "PROG", "P" and "L". (for more than 5 seconds)	PROG
3. Programme lock feature now activated.	PROG P L

8. To Release Program Lock

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Press and hold (PROG LOCK) switch until the display will show "PROG" and "P". (for more than 5 seconds)	0
3. Program lock feature is now deactivated.	PROG P

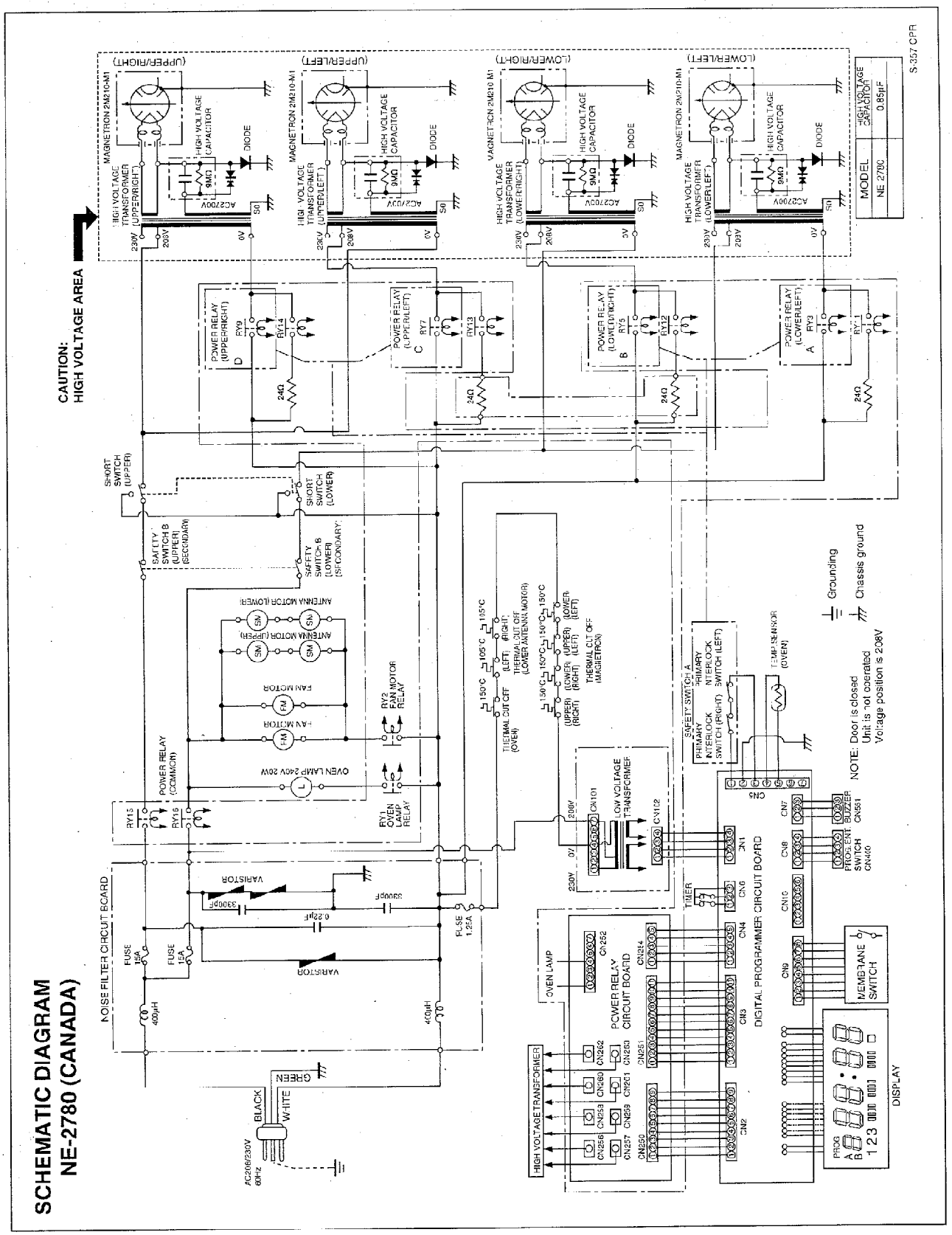
9. To Select Beep Tone Options

OPERATION	DISPLAY
1. Plug the power supply cord into wall receptacle.	
2. Press (PROG) switch.	PROG
3. Press (BEEP) switch.	PROG 1 3 bEEP
4. Select the desired sound loudness level by pressing (BEEP) switch. Repeated pressing of (BEEP) switch will lower the loudness and all the way to silent.	PROG 1 2 bEEP
5. Press (PROG) switch again.	PROG 1 2 bEEP
6. 3 seconds later display window will go blank.	

To select length of tone at end of heating cycle there are 2 options.
A. 3 beeps (factory setting)
B. 60 seconds of short beeps.
To set for 60 seconds of short beeps.

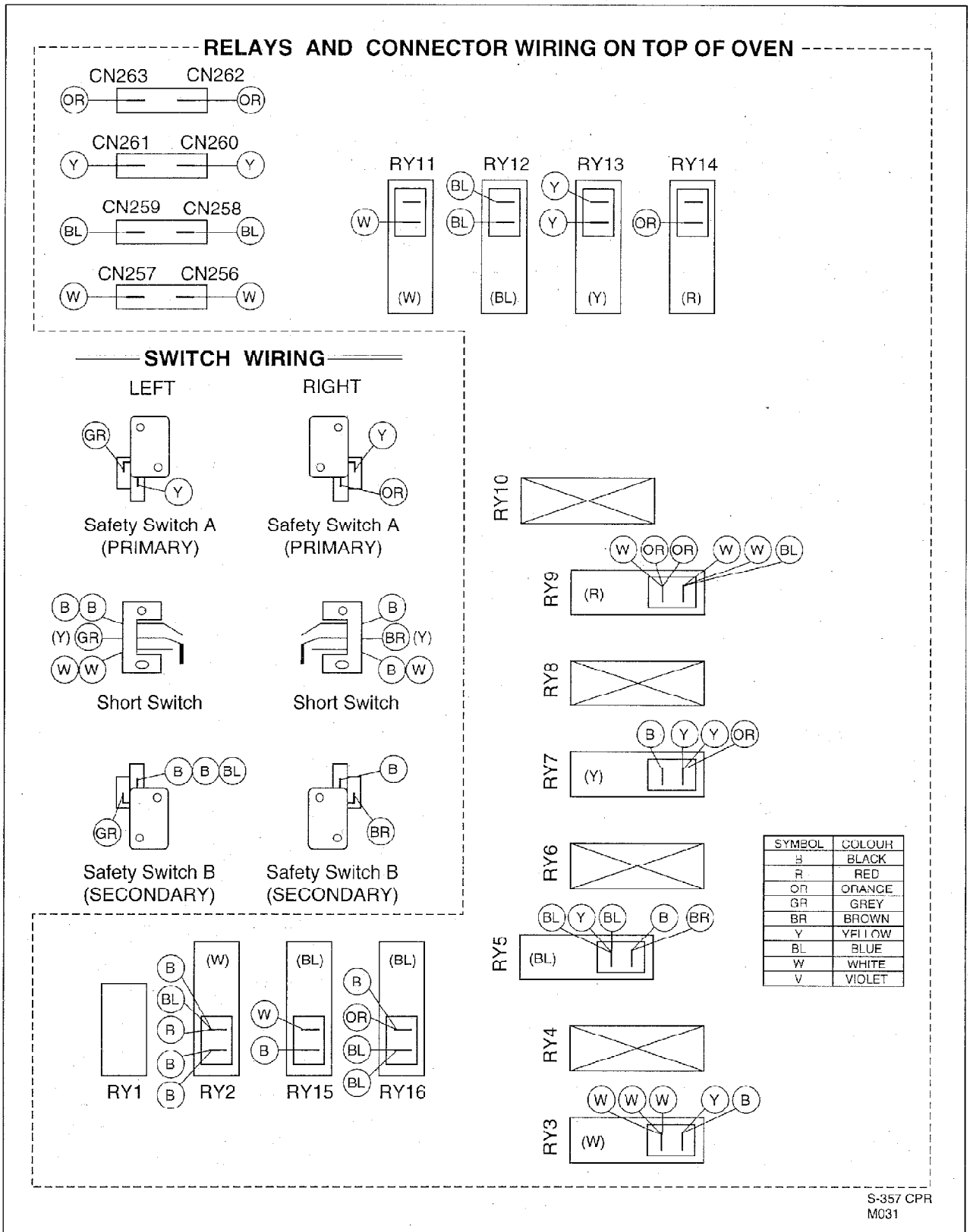
OPERATION	DISPLAY
1. Complete steps 1-4 above.	PROG 1 2 bEEP
2. Press (PROG) switch and quickly select the desired tone length by pressing (BEEP) switch. "1" illuminated 3 beeps. "2" illuminated 60 seconds of beeps.	PROG 2 2 bEEP
3. Press (PROG) switch again.	PROG 2 2 bEEP
4. 3 seconds later, the display will go blank.	

SCHEMATIC DIAGRAM NE-2780 (CANADA)

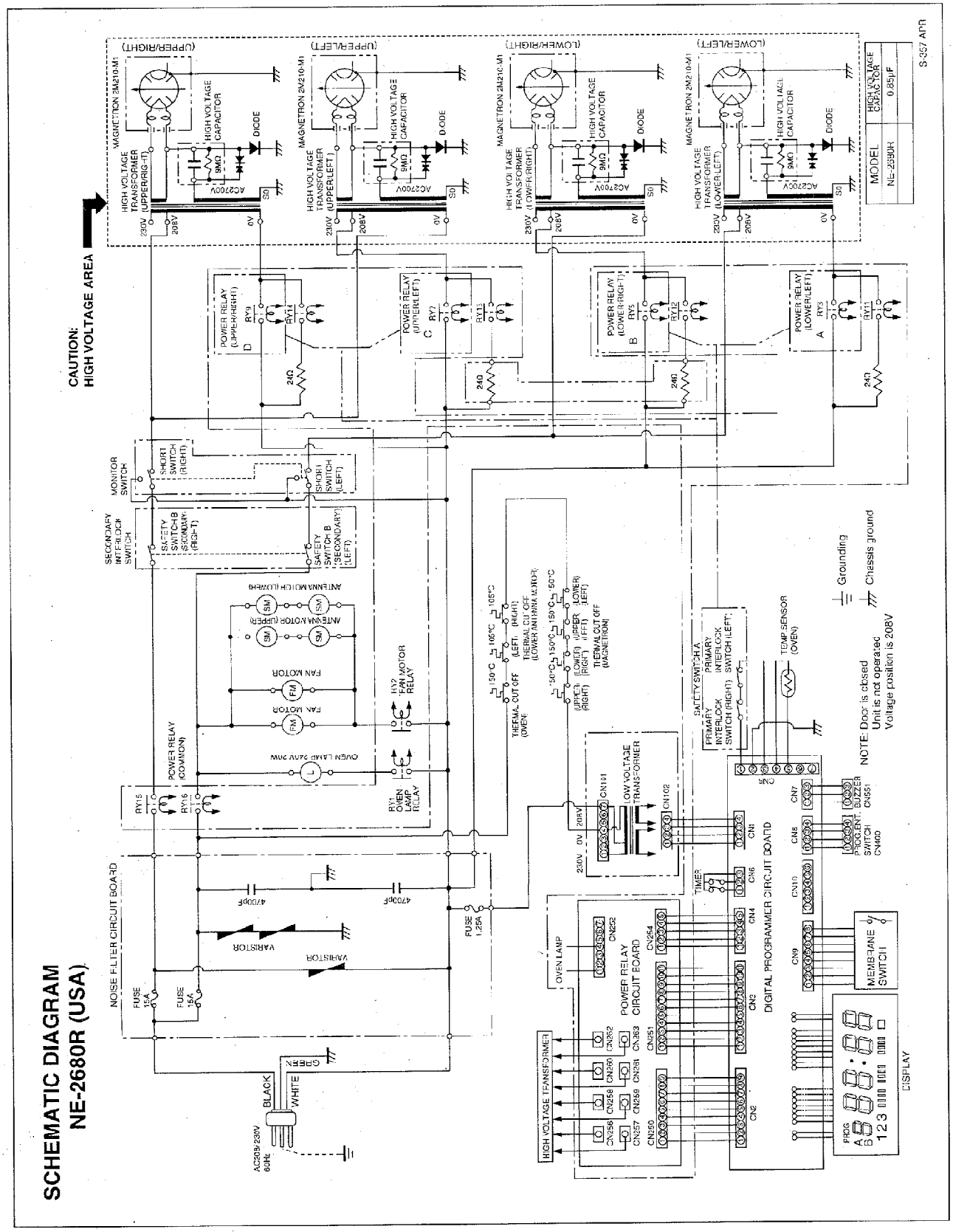


WIRING DIAGRAM NE-2780 (CANADA)

NOTE: When replacing, check the lead wire colour as shown.

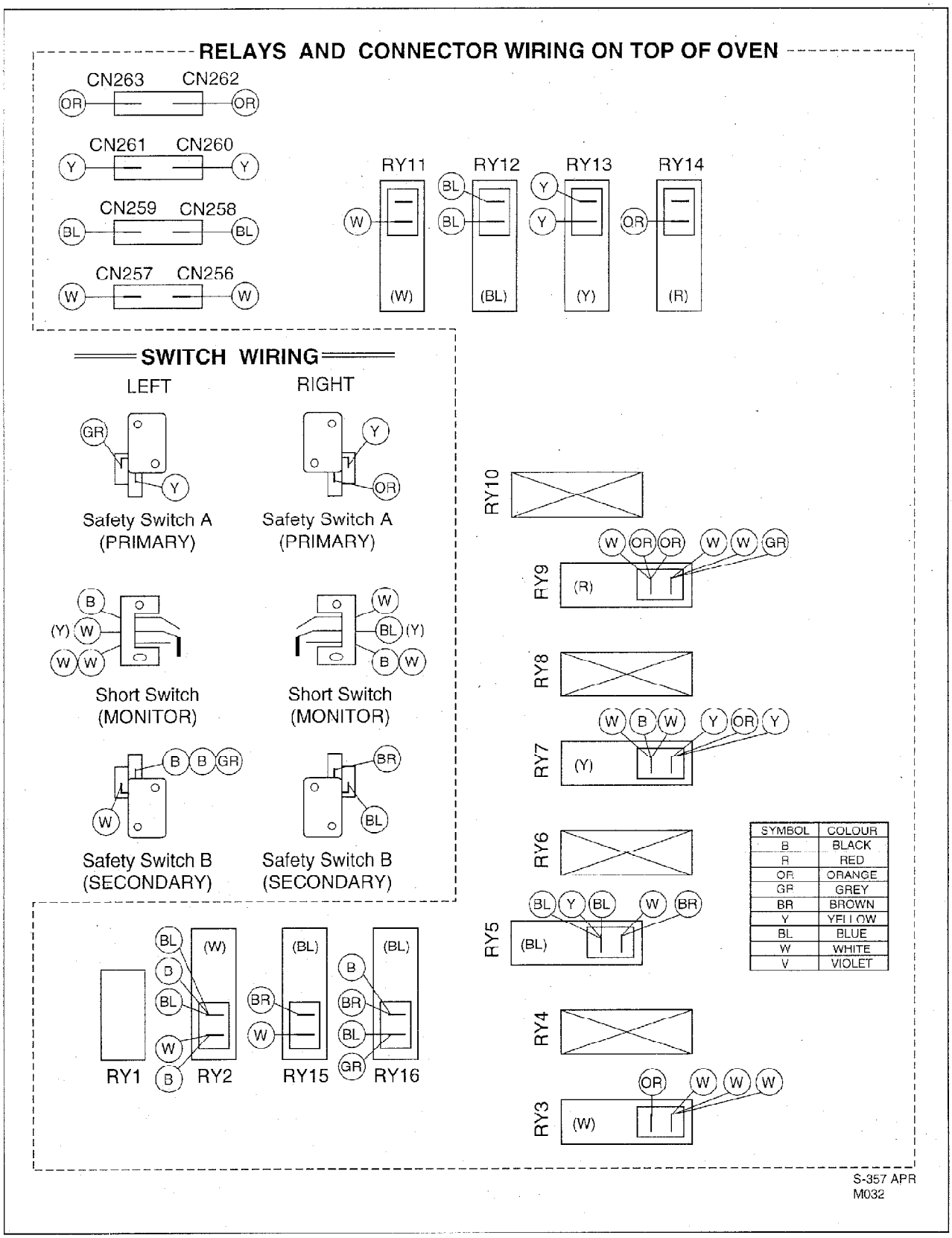


SCHEMATIC DIAGRAM NE-2680R (USA)

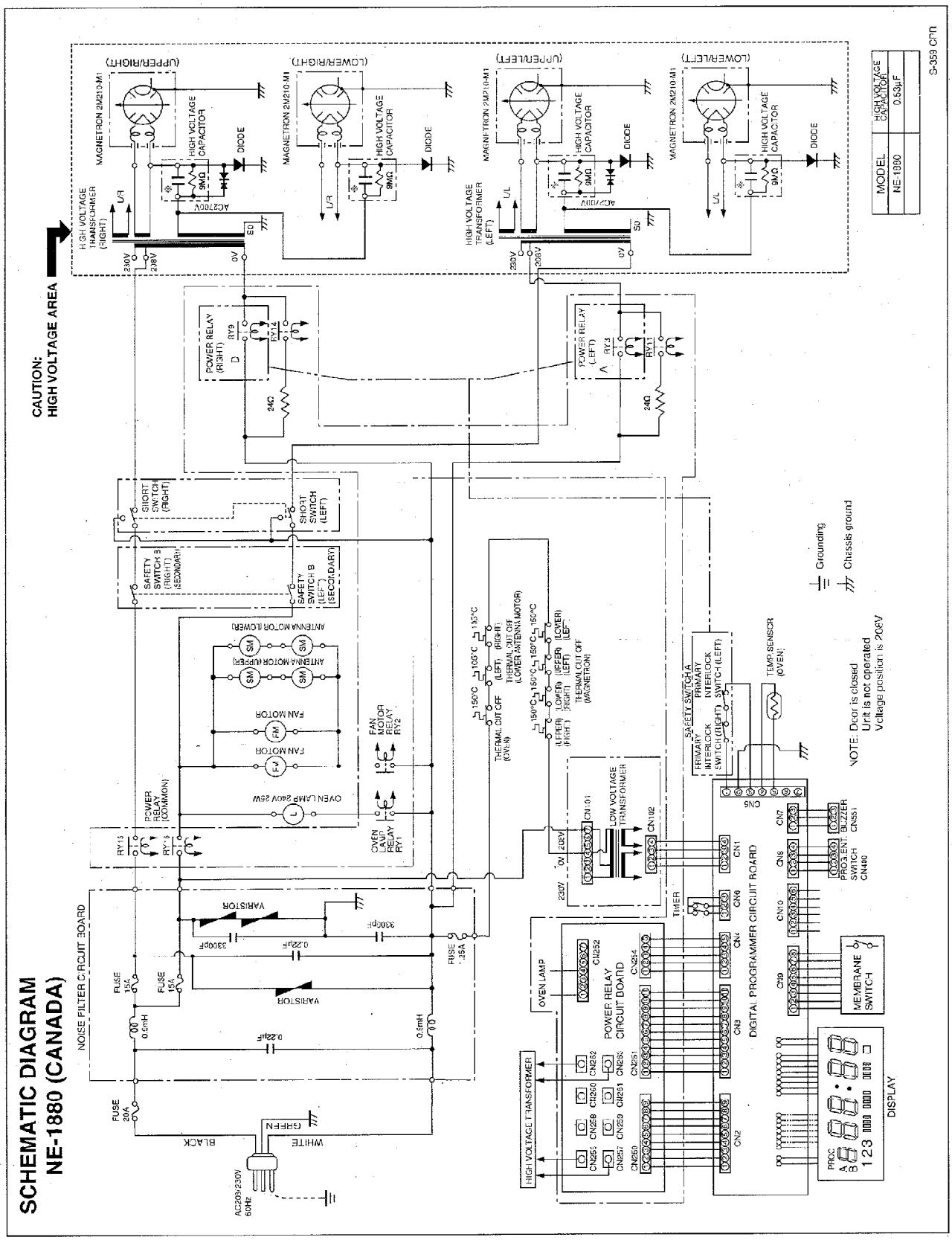


WIRING DIAGRAM NE-2680R (USA)

NOTE: When replacing, check the lead wire colour as shown.

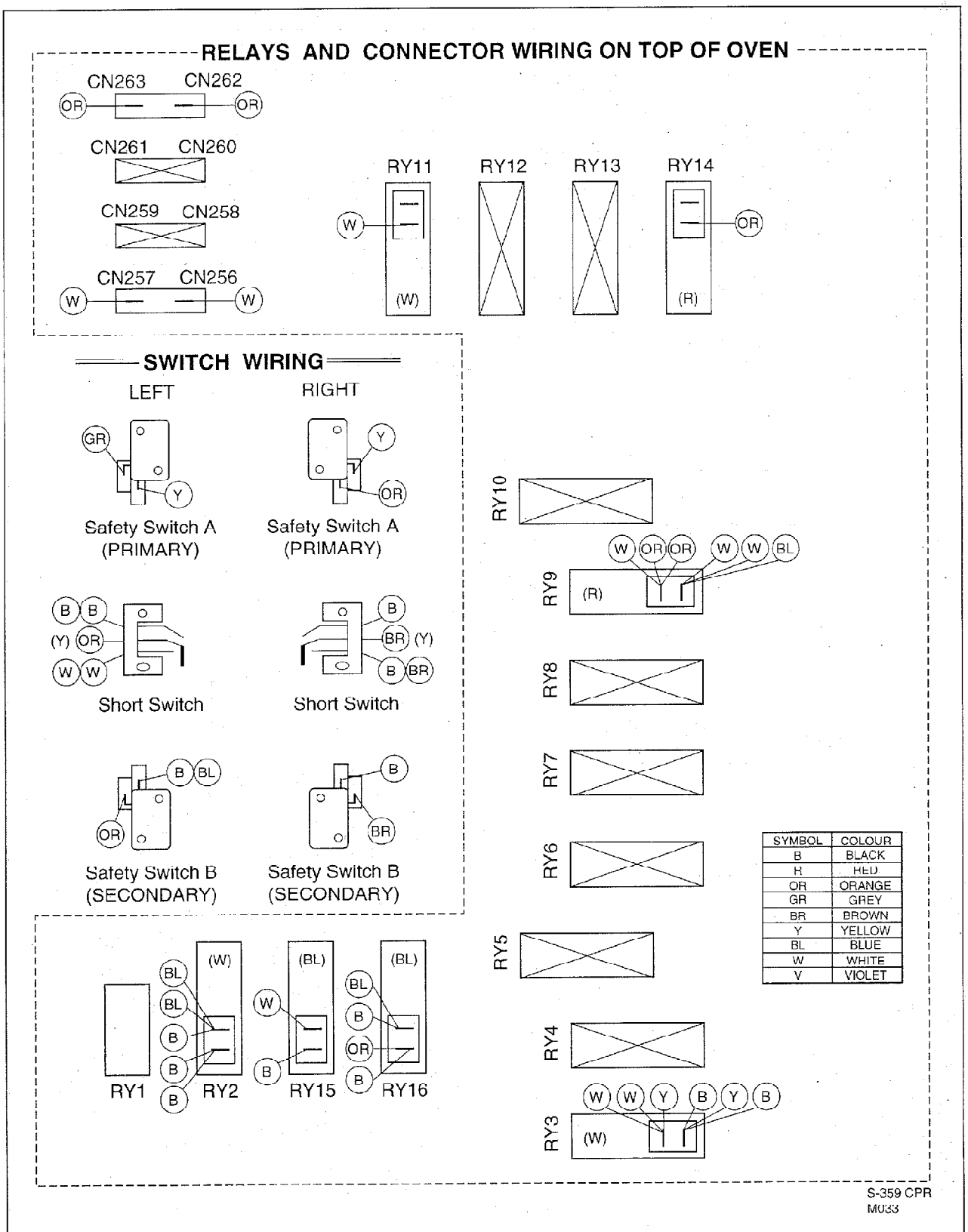


SCHEMATIC DIAGRAM NE-1880 (CANADA)

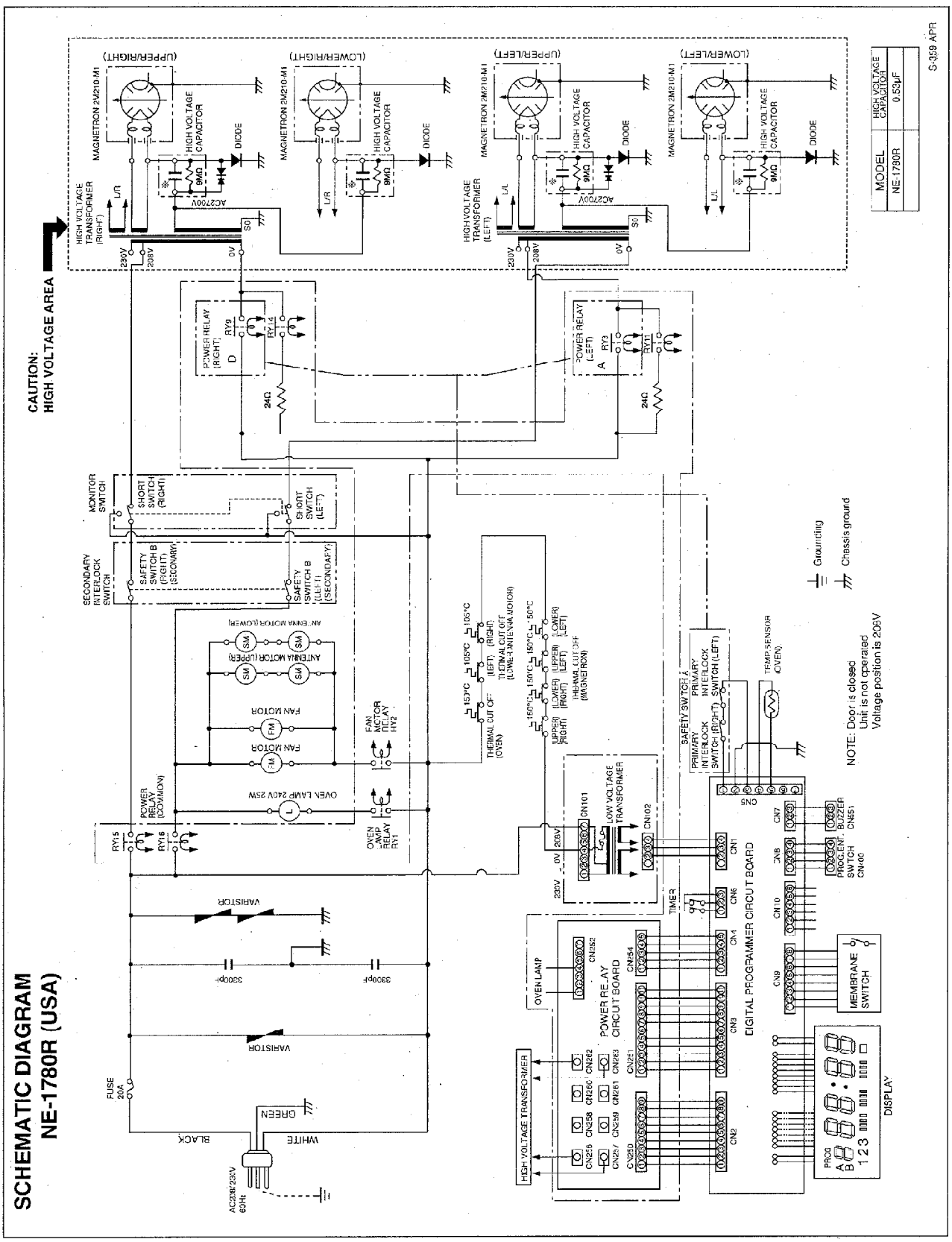


WIRING DIAGRAM NE-1880 (CANADA)

NOTE: When replacing, check the lead wire colour as shown.

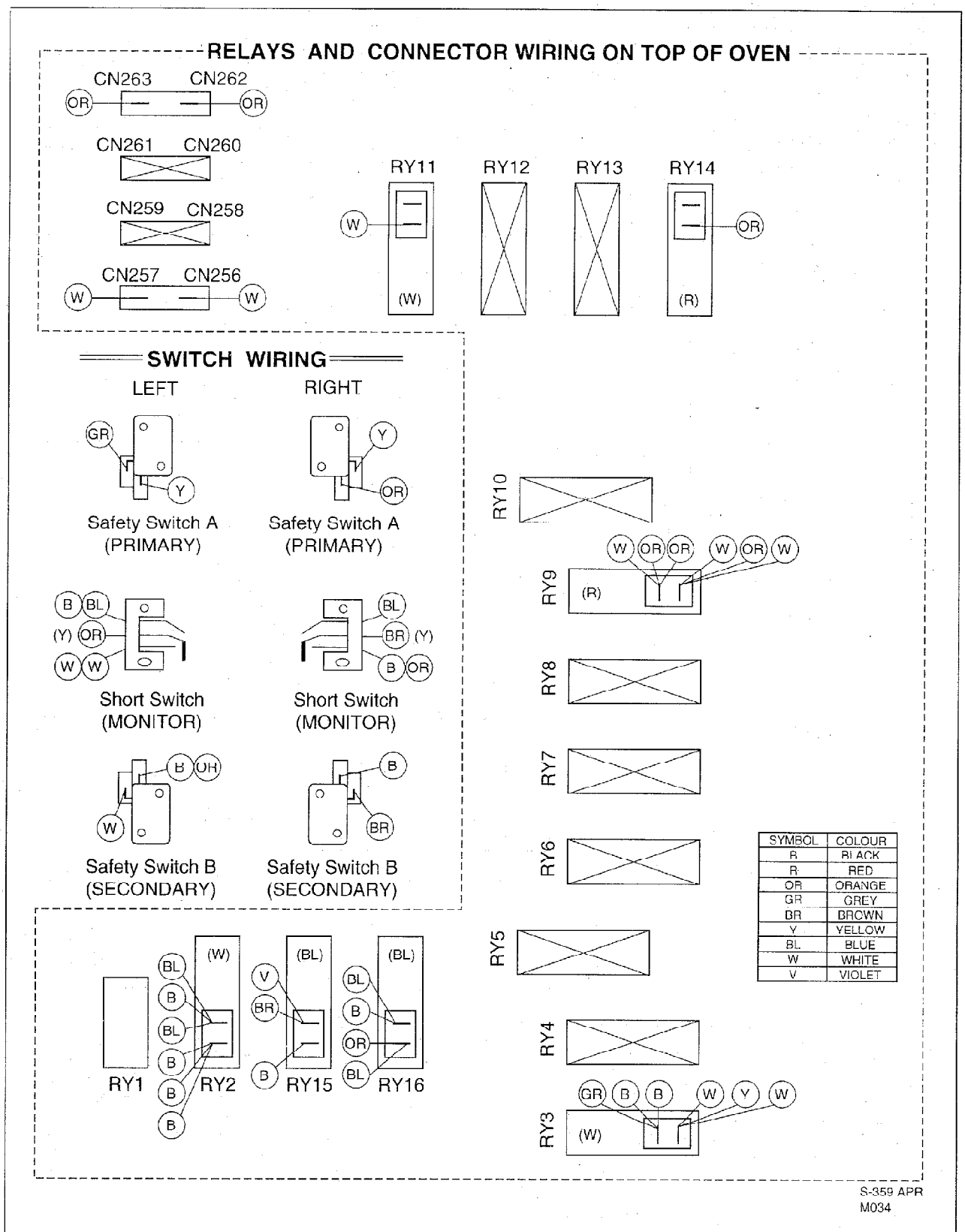


SCHEMATIC DIAGRAM NE-1780R (USA)



WIRING DIAGRAM NE-1780R (USA)

NOTE: When replacing, check the lead wire colour as shown.



DESCRIPTION OF OPERATING SEQUENCE

Variable power cooking control

The coil of power relays are energized intermittently by the digital programmer circuit, when the oven is set at any power selection except for High power position. The digital programmer circuit controls the ON-OFF time of the power relays contacts in order to vary the output power of the microwave oven. The relation between indications on the control panel and the output power of the microwave oven is as shown in table.

NOTE: ON-OFF time of power relays are changed by digital programmer circuit when remaining cooking time or selected cooking time are within 8 minutes at MED, LOW and Defrost cooking mode.

NE-2680R, NE-2780

POWER	POWER RELAY	ON-OFF TIMING OF POWER RELAY
HIGH	POWER RELAY D	ON / OFF
	POWER RELAY C	ON / OFF
	POWER RELAY B	ON / OFF
	POWER RELAY A	ON / OFF
MED	POWER RELAY D	ON / OFF
	POWER RELAY C	ON / OFF
	POWER RELAY B	ON / OFF
	POWER RELAY A	ON / OFF
LOW	POWER RELAY D	ON / OFF
	POWER RELAY C	ON / OFF
	POWER RELAY B	ON / OFF
	POWER RELAY A	ON / OFF

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NE-1780R, NE-1880

POWER	POWER RELAY	ON-OFF TIMING OF POWER RELAY
HIGH	POWER RELAY D	ON / OFF
	POWER RELAY A	ON / OFF
MED	POWER RELAY D	ON / OFF
	POWER RELAY A	ON / OFF
LOW	POWER RELAY D	ON / OFF
	POWER RELAY A	ON / OFF

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2. Defrost control

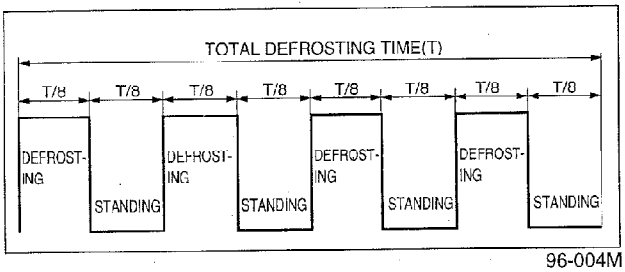
When defrost power and defrosting time is selected and Start pad is touched:

(A) The digital programmer circuit (DPC) divides the total defrosting time into 8 equal periods, consisting of four defrosting periods, each followed by a standing period. (See **figure**)

(B) During defrosting power periods, power relay ON-OFF time is controlled at Low power mode by DPC.

(C) During Standing periods, power relay is always open resulting in no microwave power.

NOTE: Defrost time selected is converted into seconds by the DPC but display will show selected time in minutes and seconds as programmed. The total number of seconds is divided into 8 time periods. The remainder (seconds not equally divisible by 8) are added to the last standing time period.



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CAUTIONS TO BE OBSERVED WHEN TROUBLESEHOOTING

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

CAUTION

Servicemen should remove their watches whenever working close to or replacing the magnetron.

1. Check the grounding

Do not operate on a 2-wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

2. Warning about the electric charge in the high voltage capacitor (Figure).

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitor.
When replacing or checking parts, remove the power plug from the outlet and short the terminal of the high voltage capacitor (terminal of lead wire from diode) to chassis ground with an insulated handle screwdriver or insulated jumper lead wire to discharge.

WARNING

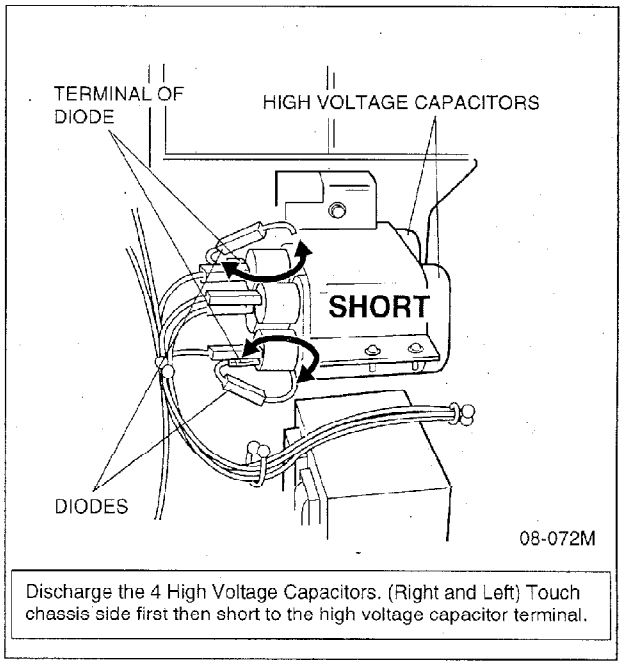
There is high-voltage present, with high-current capabilities in the circuits of the high voltage winding and filament winding of the high voltage transformer. It is extremely dangerous to work on or near these circuits with oven energized.
DO NOT measure the voltage in the high voltage circuit including filament voltage of magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

3. When parts must be replaced, remove the power plug from the outlet.

4. When the 15 Amp. (NE-2680R/NE-2780/1880) or 20 Amp. (NE-1780R/NE-1880) fuse is blown due to the operation of interlock monitor, replace the necessary components according to the following table.



Discharge the 4 High Voltage Capacitors. (Right and Left) Touch chassis side first then short to the high voltage capacitor terminal.

5. Avoid inserting nails, wire, etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any other holes or gaps, because such objects may work as an antenna and cause microwave leakage.

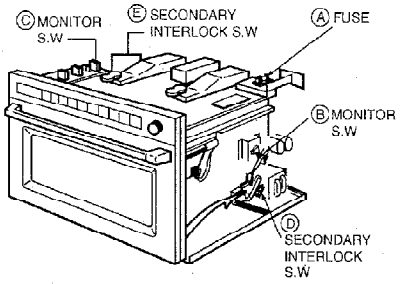
6. Confirm after repair

(A) After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing.
(B) Make sure that all electrical connections are tight before inserting the plug into the wall outlet.
(C) Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage on page 26.)

— For USA models only —

WARNING – FOR CONTINUED PROTECTION AGAINST EXCESSIVE RADIATION EMISSION REPLACE ONLY WITH THE SAME TYPE COMPONENT MARKED BY "⚠"
WHEN REPLACING FUSE CHECK OPERATION OF DOOR INTERLOCK AND INTERLOCK MONITOR CIRCUIT AS MARKED BY "⚠" AND REPLACE ANY FAULTY COMPONENTS.

LOCATION OF COMPONENTS	4 H.V. TRANS. MODEL		2 H.V. TRANS. MODEL	MODEL DISTINCTION : CHECK THE NUMBER OF HIGH VOLTAGE TRANSFORMER EMPLOYED.
	TERMINAL HOUSING			CHECK WHICH FUSE IS BLOWN : (DISTINGUISHED BY COLOR OF PLASTIC TERMINAL HOUSING)
A	BLACK	WHITE		
	⚠	⚠	—	FUSE : TYPE MDA/RATED 15A 250V (ANE6595P40AP)
	—	—	⚠	FUSE : TYPE MDA/RATED 20A 250V (ANE6230P30AP)
B	—	⚠	⚠	MONITOR S.W. (RIGHT) : TYPE303GP (A61583030GP)
C	⚠	—	⚠	MONITOR S.W. (LEFT) : TYPE305GP (A61583050GP)
D	—	⚠	⚠	SECONDARY INTERLOCK S.W. (RIGHT) : TYPE V-15G-3C26 (ANE6142-F60)
E	⚠	—	⚠	SECONDARY INTERLOCK S.W. (LEFT) : TYPE V-15G-3C26 (ANE6142-F60)



DISASSEMBLY AND PARTS REPLACEMENT PROCEDURE

CAUTION
Servicemen should remove their watches whenever working close to or replacing the magnetron.

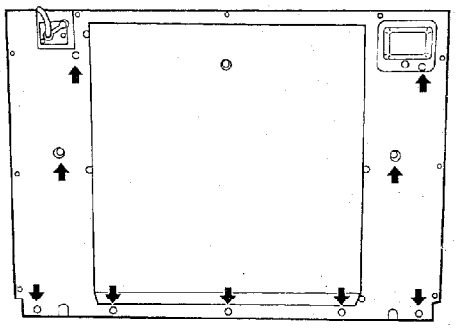
1. Magnetrons (Upper and Lower)

Upper magnetrons (Right and Left)
(A) Discharge electric charge remaining on the high voltage capacitors.
(B) Remove the entire rear panel by removing screws as shown in **figure.**
(C) Disconnect all lead wires from magnetron and thermal cutout.
(D) Remove the 4 screws holding magnetron.
(E) Remove 2 screws holding thermal cutout.
(F) Remove the mounting bracket from magnetron and install it on the new magnetron.

Lower magnetrons (Right and Left)
(A) Discharge electric charge remaining on the high voltage capacitors.
(B) Remove the entire rear panel by removing screws as shown in **figure.**
(C) Disconnect all lead wires from magnetron and thermal cutout.
(D) Remove the 4 screws holding magnetron.
(E) Remove 2 screws holding thermal cutout.
(F) Remove the air guide from magnetron and install it on the new magnetron.

NOTE: To prevent microwave leakage, tighten mounting screws properly making sure there is no gap between the waveguide and the magnetron.

CAUTION
When connecting 2 filament lead wires to the magnetron terminals, be sure to connect the lead wires in the correct position. The lead wire with blue connector should be connected to "FA terminal" and white one should be connected to "F terminal". (See **Figure**)



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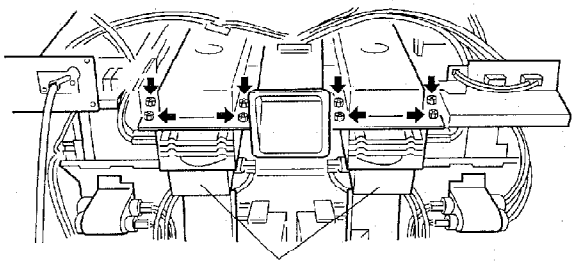

UPPER
MAGNETRONS

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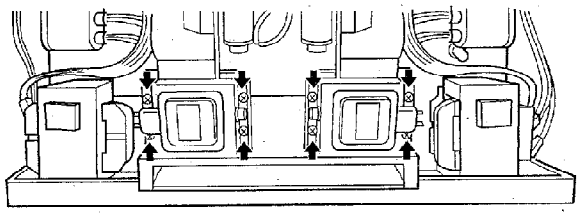

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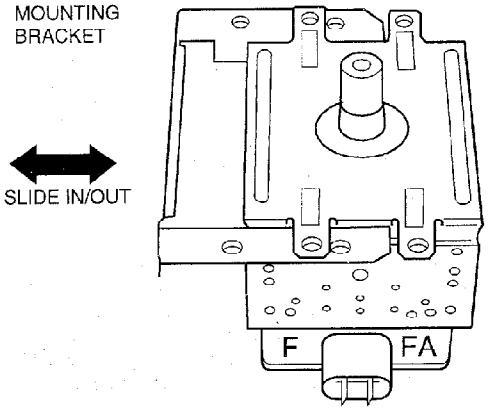


08-039M

2. Digital programmer circuit board

(A) Remove grounding screw for membrane switch and D.P.C. ground.
(B) Remove 2 screws holding control panel assembly to detach it from main unit then remove connectors.
(C) Remove 2 screws holding the D.P.C. board and remove the board by freeing catch hooks.

NOTE: Please use care in handling the power supply P.C.B. and D.P.C. board to avoid damage.

3. Low voltage transformer and/or power relays

NOTE: Be sure to ground any static electric charge built up on your body before handling the DPC.

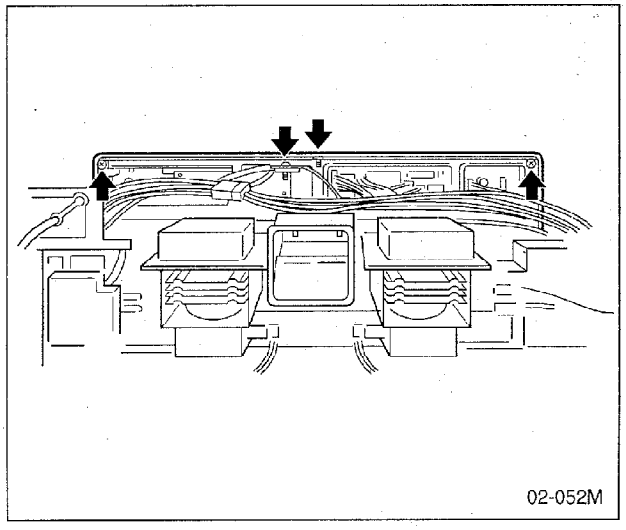
(A) Using solder wick or a desoldering tool and 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.

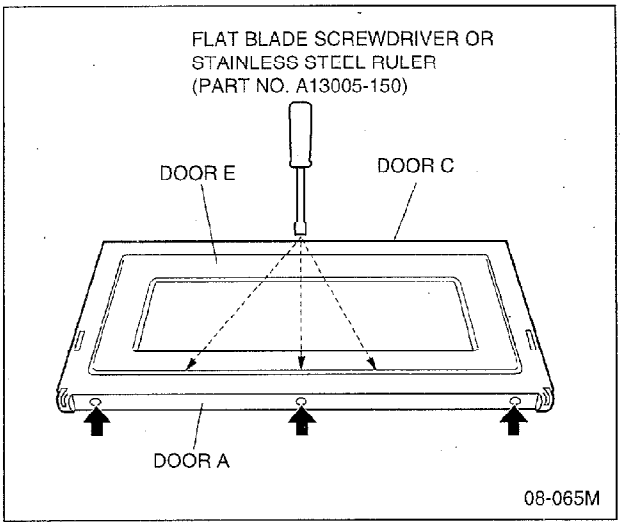
NOTE: Do not use a soldering iron or desoldering tool of more than 30 watts on DPC contacts.

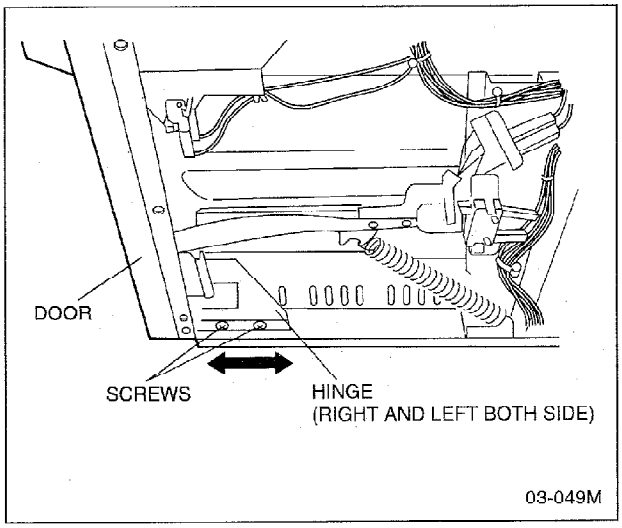
(B) With all the terminal pins cleaned and separated from DPC contacts, remove the defective transformer/power relays and install new transformer/power relays making sure all terminal pins are inserted completely. Resolder all terminal contacts carefully.

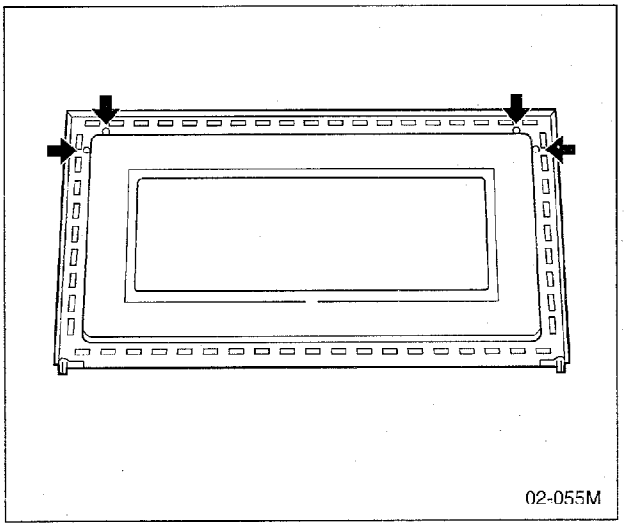
4. Disassembly of door assembly

(A) Detach the door spring ends from right and left door arms.
(B) Remove the arm lever right and left by removing 2 screws each on both sides.
(C) Remove the sashes right and left by removing 1 screw each on both sides.
(D) By holding the door assembly, remove the right and left sides door hinge pins.
The door assembly is now free from the oven.
(E) Remove 3 screws holding the door A.
(F) Remove the door C by using a flat screwdriver as **figure**.
(G) Remove 4 screws holding door handle.
(H) Separate door A and door E.
(I) Remove the door arms by removing 1 pin each on both sides.









5. Upper antenna (Right and Left)

Upper antenna (Right and Left)

(A) Remove 8 plastic clips holding ceiling plate and exhaust guides by using flat screwdriver or the like.

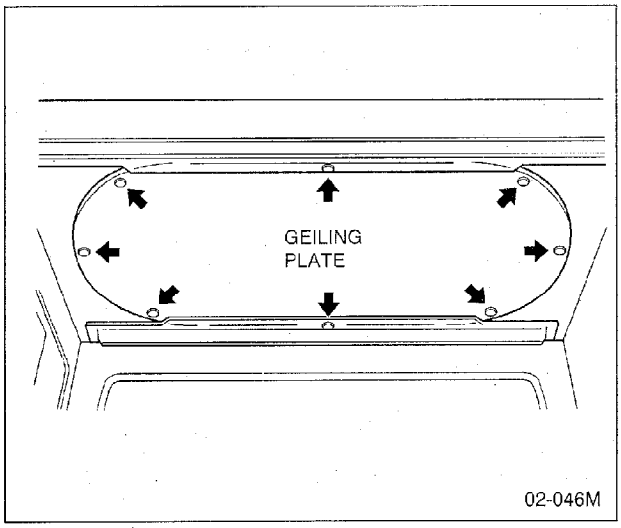
(B) Remove 2 screws holding upper antenna assy by inserting screwdriver through the opening on the antenna as shown in **figure**.

6. Lower antenna (Right and Left)

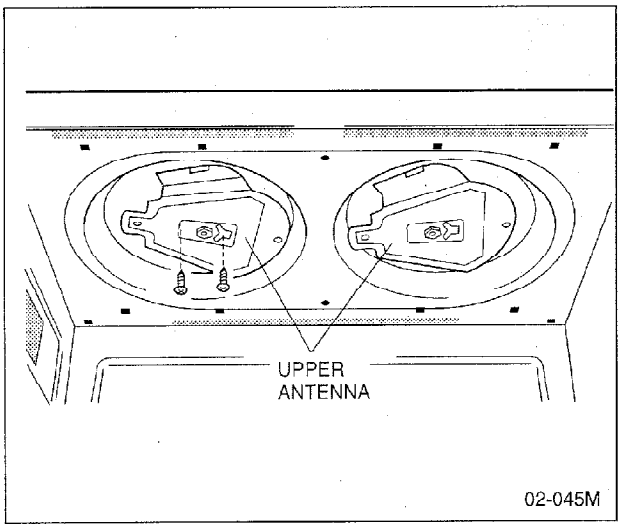
Lower antenna (Right and Left)

(A) To remove the floor shelf, insert a screwdriver through the openings on the right and left sides of the oven cavity and carefully lift the floor shelf as shown in **figure**.

(B) Remove 2 screws holding lower antenna assy by inserting screwdirver through the opening on the antenna as shown in **figure**.



02-046M



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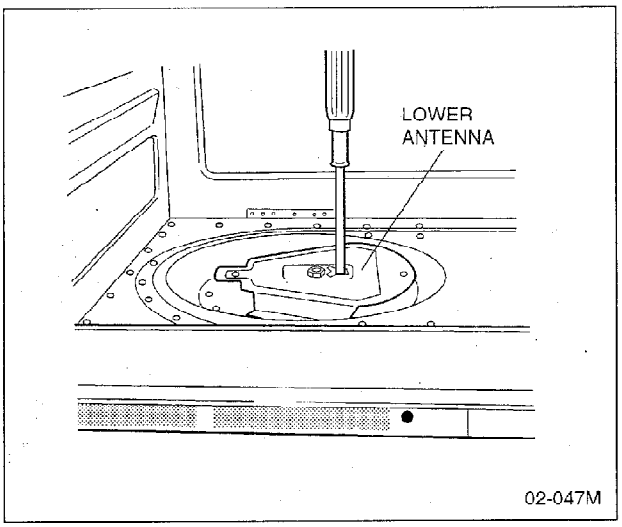

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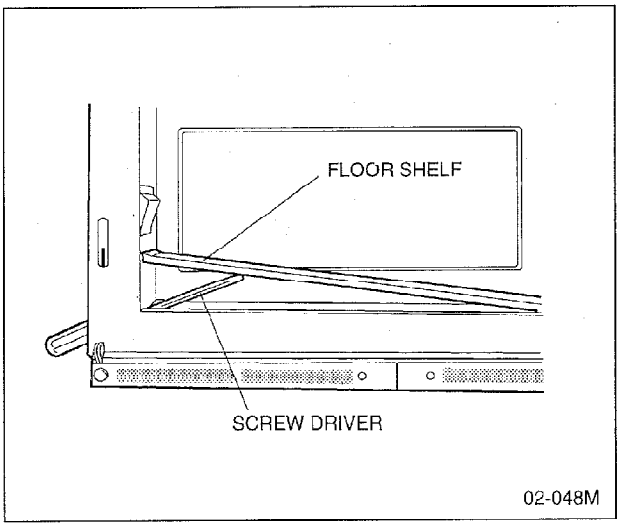
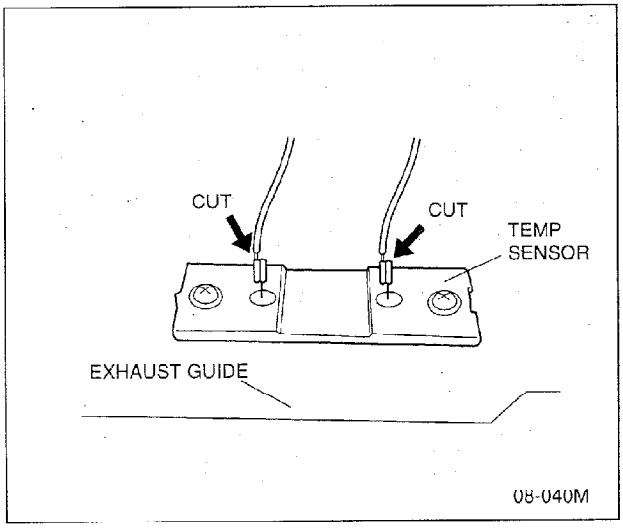


02-048M

7. Replacement of temperature sensor (Thermal protector)

(A) Cut 2 lead wires at the top of sensor terminals.
(B) Remove 2 screws holding temp sensor and replace with new one.
(C) Solder the lead wires securely to the sensor terminals.

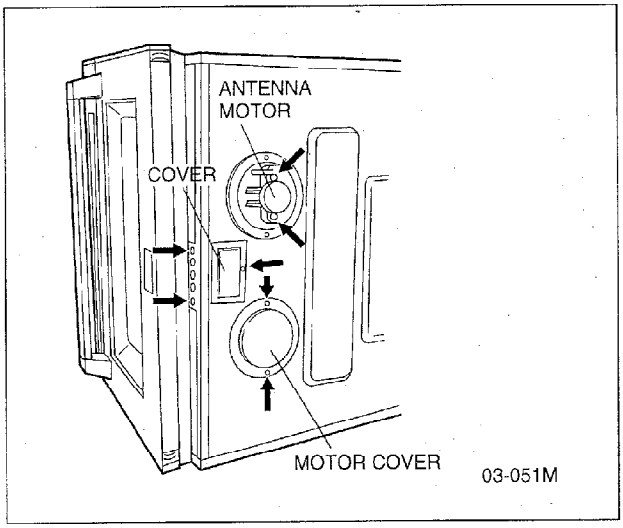


8. Replacement of antenna motors (upper and lower)

(A) The upper antenna motor may be removed by disconnecting the lead wire connectors and removing its 2 mounting screws.
(B) To remove the lower antenna motor, carefully place the unit on its left side.
(C) Remove the motor cover by removing 2 screws and follow same procedure as for upper antenna.

CAUTION
There are two types of antenna motors Therefore please replace with correct one as showing below.

Upper Antenna Motor	PART NO. : ANE61446030AP (RATED: 120V)
Lower Antenna Motor	PART NO. : A6144-3280 (RATED: 120V)

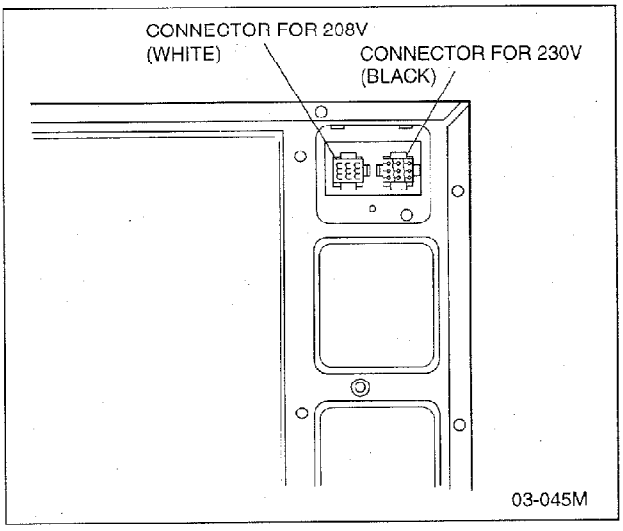


9. Program, Beep and Program Lock switches board. (P. C. Board F assy)

(A) Remove air filters.
(B) Place the unit on its left side carefully.
(C) Peel off panel B.
(D) Remove 1 screw holding cover. (Figure)
(E) Remove 2 screws holding switch assy.
(F) Remove connector and remove 2 screws holding switch board.

10. Voltage selection (208V → 230V)

(A) Remove 1 screw holding voltage selection connector cover.
(B) Plug the connector out from white (208V) socket and plug the connector into the black (230V) socket.



COMPONENT TEST PROCEDURE

CAUTION

1. High voltage is present at the high voltage terminal of the high voltage transformer during any cook cycle.
2. It is neither necessary nor advisable to attempt measurement of the high voltage.
3. Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitor.

1. Primary Interlock Switch (SAFETY SWITCH A), Secondary Interlock Switch (SAFETY SWITCH B) and Power Relay

(A) Unplug the power cable.
(B) Unplug lead wire connectors to Power Relay (RY2-16) and verify continuity of the power relay terminals.
(C) Unplug lead wire connectors to Primary Interlock Switch and Secondary Interlock Switch.
(D) Test the continuity of switches with the door in both open and closed positions with ohm meter (low scale).
Normal continuity readings should be as follows.

	Door Opened	Door Closed
Primary Interlock Switch	∞ Ω (open)	0 Ω (close)
Secondary Interlock Switch	∞ Ω (open)	0 Ω (close)
Power Relays	∞ Ω (open)	∞ Ω (close)

2. Short/Monitor Switch (Both Right and Left)

	Door Opened	Door Closed
NO Terminals	∞ Ω (open)	0 Ω (close)
NC Terminals	0 Ω (close)	∞ Ω (open)

3. High voltage transformer

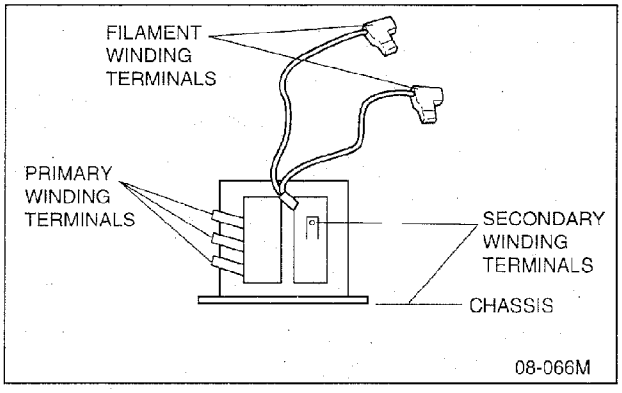
(A) Remove connections from the transformer terminals and check continuity.
(B) Normal (cold) resistance readings should be as follows:
Secondary winding ..... Approx. 40 Ω ~ 100 Ω
Filament winding ..... Approx. 0 Ω
Primary winding ..... Approx. 0 Ω ~ 3 Ω

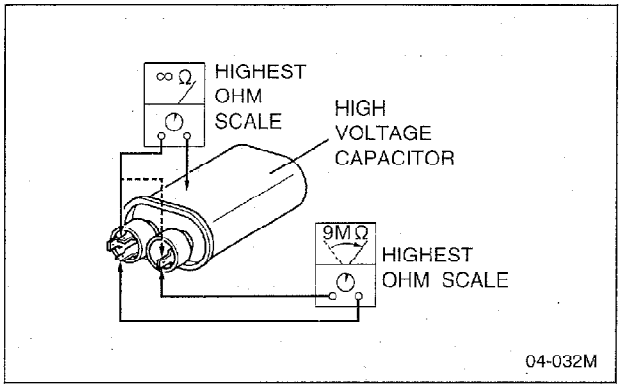
4. High voltage capacitor

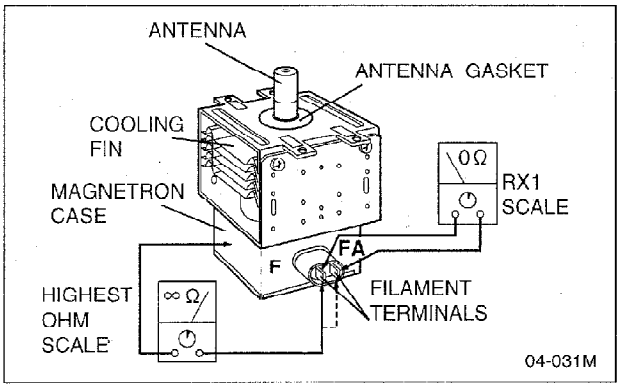
(A) Check continuity of capacitor with meter on highest OHM scale.
(B) A normal capacitor will show continuity for a short time, and then indicate 9MΩ once the capacitor is charged.
(C) A shorted capacitor will show continuous continuity.
(D) An open capacitor will show constant 9MΩ.
(E) Resistance between each terminal and chassis should be infinite.

5. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose for an open filament or shorted magnetron.
(A) Isolate magnetron from the circuit by disconnecting the leads.
(B) A continuity check across magnetron filament terminals should indicate one ohm or less.
(C) A continuity check between each filament terminal and magnetron case should read open.

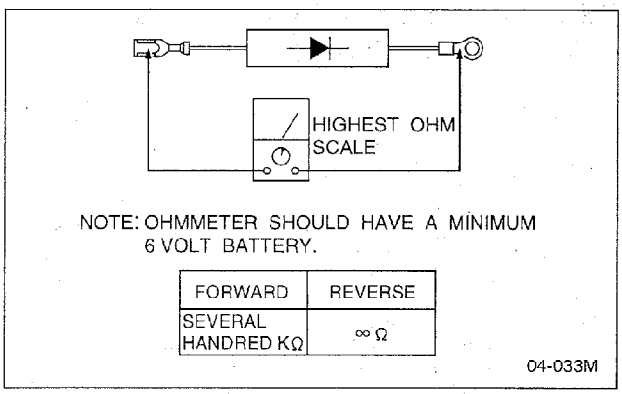






6. Diode

(A) Isolate the diode from the circuit by disconnecting the leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-to-back resistance of the diode, otherwise an infinite resistance may be read in both directions.
A normal diode's resistance will be infinite in one direction and several hundred kΩ in the other direction.

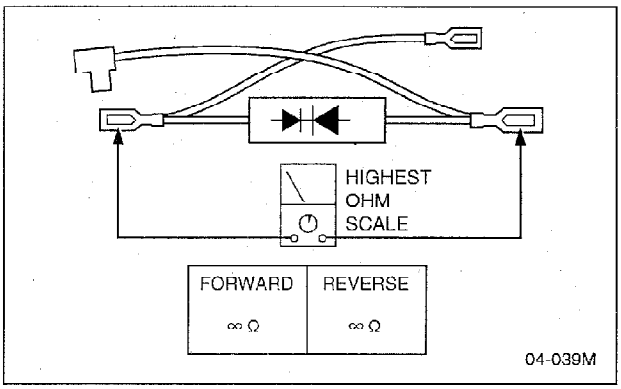


7. Membrane key board (Membrane switch assembly)

Check continuity between switch terminals, by tapping an appropriate pad on the key board. The contacts assignment of the respective pads on the key board is as shown in digital programmer circuit.

8. Protector diode

(A) Isolate the protector diode assembly from the circuit by disconnecting its leads.
(B) With the ohmmeter set on the highest resistance scale, measure the resistance across the protector diode terminals.
Reverse the meter leads and again observe the resistance reading.
A normal protector diode's resistance will be infinite in both directions.
It is faulty if it shows continuity in one or both directions.



9. Temp sensor (Thermal protector)

A temp sensor is mounted on exhaust guide. Its purpose is to automatically shut off the oven in case the cavity overheats for any reason.
The thermal protector will operate at 257°F (125°C).
The device is connected to the DPC on touch control models.
When the thermal protector exceeds its temperature it will turn off the power to oven cavity and display wil go to reset mode.
The cooking program can be reset after cool-down.
THERMISTOR RESISTANCE VALUE
30K-120K at 10°C-30°C (50°F-86°F)

MEASUREMENTS AND ADJUSTMENTS

1. Adjustment of the secondary interlock switch (SAFETY SWITCH B) (Right and Left side)

(A) Switch operation

When the door is slightly opened, the secondary interlock switch opens the main circuit.

The movement of the door from the closed position to the operation position (shown as ℓ) of the switch when it opens the main circuit, must maintain within following tolerances.

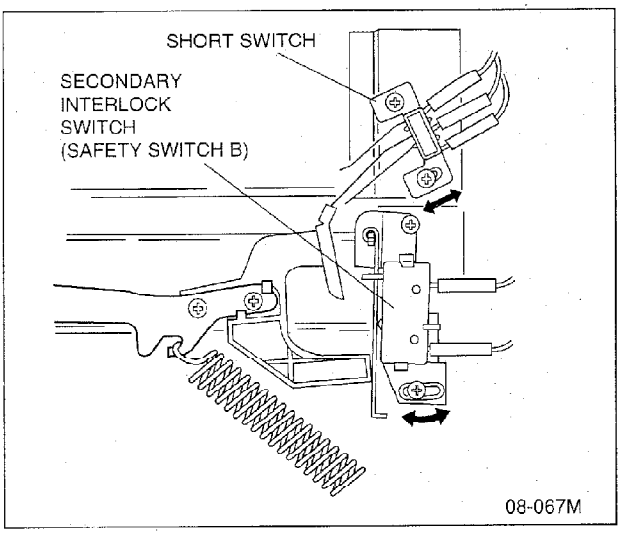
SECONDARY INTERLOCK SWITCH (ℓ) = 3 mm ~ 5 mm

(When secondary interlock switch opens the main circuit)

Note: Make sure that primary interlock switch turns off prior to the secondary interlock switch when the door is gradually opened.

(B) How to adjust secondary interlock switch

Loosen 2 screws which secure the secondary interlock switch bracket to the bracket of the oven assembly and then adjust the secondary interlock switch bracket by moving it to either direction as shown in **figure**.



08-067M

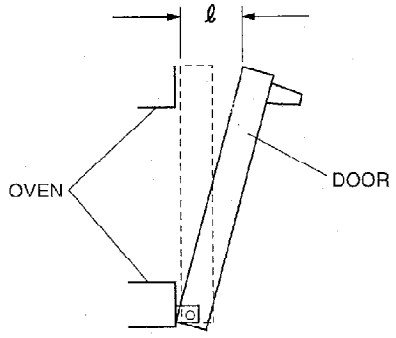
2. Adjustment of the Short Switch (MONITOR SWITCH) (Right and Left side)

(A) When the door is slightly opened, the Short Switch opens the main circuit and closes the contacts for short circuit.

The movement of door from its closed position to open position at which the Short Switch contacts open the main circuit (shown as ℓ) must maintain within 8 mm ~ 11 mm and at which the switch contacts close the short circuit should be 20 mm ~ 35 mm.

(B) How to adjust

Loosen the 2 screws holding the short switch to the short switch bracket, and then adjust the safety switch A by moving it to either direction as shown in **figure**.



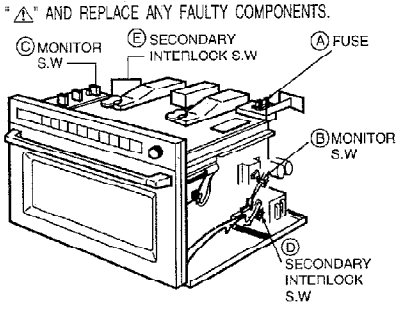
08-068M

To measure " ℓ ", use stainless steel ruler is convenient which available from spare part route. (Part No. A13005-150)

— For USA models only —

WARNING – FOR CONTINUED PROTECTION AGAINST EXCESSIVE RADIATION EMISSION REPLACE ONLY WITH THE SAME TYPE COMPONENT MARKED BY "⚠"
WHEN REPLACING FUSE CHECK OPERATION OF DOOR INTERLOCK AND INTERLOCK MONITOR CIRCUIT AS MARKED BY "⚠" AND REPLACE ANY FAULTY COMPONENTS.

LOCATION OF COMPONENTS	4 H.V. TRANS. MODEL		2 H.V. TRANS. MODEL	MODEL DISTINCTION : CHECK THE NUMBER OF HIGH VOLTAGE TRANSFORMER EMPLOYED.
	TERMINAL HOUSING			CHECK WHICH FUSE IS BLOWN : (DISTINGUISHED BY COLOR OF PLASTIC TERMINAL HOUSING)
A	BLACK	WHITE		
	⚠	⚠	—	FUSE : TYPE MDA/RATED 15A 250V (ANE6595P40AP)
		—	⚠	FUSE : TYPE MDA/RATED 20A 250V (ANE6230P30AP)
B	—	⚠	⚠	MONITOR S.W. (RIGHT) : TYPE303GP (A61583030GP)
C	⚠	—	⚠	MONITOR S.W. (LEFT) : TYPE305GP (A61583050GP)
D	—	⚠	⚠	SECONDARY INTERLOCK S.W. (RIGHT) : TYPE V-15G-3C26 (ANE6142-F60)
E	⚠	—	⚠	SECONDARY INTERLOCK S.W. (LEFT) : TYPE V-15G-3C26 (ANE6142-F60)



3. Adjustment of the primary interlock switch (SAFETY SWITCH A) (Right and Left side)

(A) Switch operation

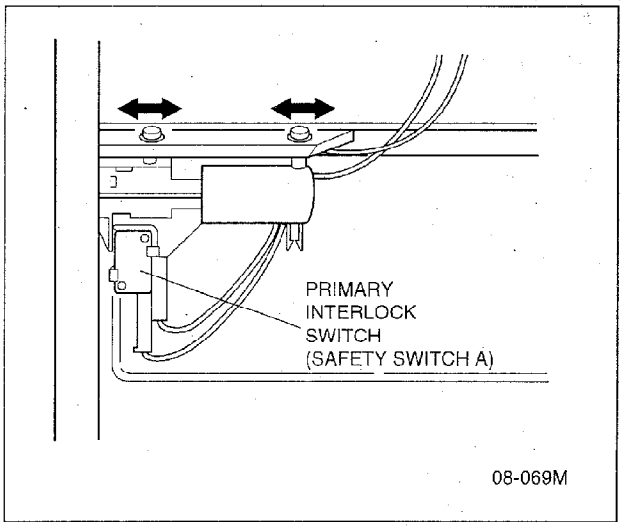
When the door is slightly opened, the contacts of primary interlock switch opened to give digital programmer circuit the information that the door is opend. The allowable movement of the door from the closed position to the operating position (shown as ℓ) of the switch when it opens the circuit, is specified as follows;

PRIMARY INTERLOCK SWITCH (ℓ) = 1 mm ~ 3 mm
(When primary interlock switch opens the circuit)

Note: Make sure that primary interlock switch turn off prior to the secondary interlock switch when the door is gradually opened.

(B) How to adjust primary interlock switch

Loosen 2 screws which secure the primary interlock switch bracket to the bracket of the oven assembly and then adjust the primary interlock switch bracket by moving it to either direction as shown in **figure.**



08-069M

4. Measurement of microwave output

The output power of the magnetron can be determined by performing IEC standard test procedures. However, it is possible to test the magnetron by following procedure outlined below.

Necessary equipement:

* 1 litre beaker * Glass thermometer
* Wrist watch or stopwatch

NOTE: Check the line voltage under load to ensure it meets specifications. Low voltage condition will cause a reduction in magnetron output. Temperature readings and heating time, should be as accurate as possible.

Output power performance test procedure.

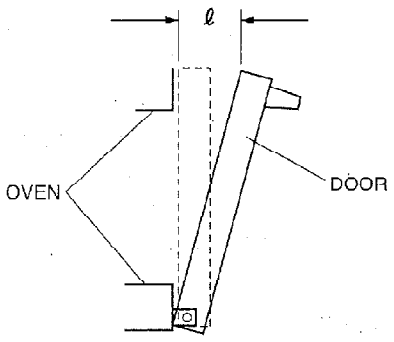
(A) Fill the beaker with exactly one litre of tap water.
Stir the water using the thermometer and note the temperatrue.
(Record as T1)

(B) Place the beaker in the center of cook plate.
Set the oven for High power and heat for exactly one minute.

(C) After completion of the heating cycle, stir the water again with the thermometer and note the temperatute.
(Record as T2)

The normal temperature rise (T2-T1) at High power position for each models is as shown in following table.

Model	Temperature Rise (1 ℓ - 1 Min.)
NE-2780	Min. 22°C
NE-2680R	Min. 22°C
NE-1880	Min. 16°C
NE-1780R	Min. 16°C



08-068M

To measure " ℓ ", use stainless steel ruler is convenient which available from spare part route. (Part No. A13005-150)

PROCEDURE FOR MEASURING RADIATION LEAKAGE

WARNING

Check for radiation leakage after every servicing. Should the leakage be more than 2 mW/cm² (1mW/cm² for Canada) inform PASC, PSC, or PCI immediately. After repairing or replacing any radiation safety device, keep a written record for future reference, as required by D.H.H.S. and Health and Welfare Canada regulation. This requirement must be strictly observed. In addition, the leakage reading must be recorded on the service repair ticket while in the customer's home.

NOTE: The U.S. government standard is 5mw/cm² while in the customer's home. 2mw/cm² stated here is Panasonic's own voluntary standard.

1. Equipment

*Electromagnetic radiation monitor
*Glass thermometer 212°F or 100°C
*600cc glass beaker

2. Procedure for measuring radiation leakage.

Note before measuring

(1) Do not exceed meter full scale deflection Leakage monitor should initially be set to the highest scale.

(2) To prevent false readings the test probe should be held by the grip portion of the handle only and moved along the shaded area shown in Figure right no faster than 1 inch/sec (2.5 cm/sec)

(3) Leakage with the outer panel removed·····less than 5mw/cm²

(4) Leakage for a fully assembled oven with door normally closed ·····less than 2mw/cm²

(5) Leakage for a fully assembled oven [Before the interlock switch (primary) is interrupted] while pulling the door·····less than 2mw/cm²

(A) Pour 275±15cc (9ozs ± 1/2oz) of 20 ± 5°C(68 ± 9°F) water in a beaker which is graduated to 600cc, and place the beaker in the center of the oven.

(B) Set the radiation monitor to 2450MHz and use it following the manufactuer's recommended test procedure to assure correct results.

(C) When measuring the leakage, always use the 2 inch (5cm) spacer supplied with the probe.

(D) Press the start button and with the magnetron oscillating, measure the leakage by holding the probe perpendicular to the surface being measured.

(1) Measurement with the outer panel removed.

Whenever you replace the magnetron, measure for radiation leakage before the outer panel is installed and after all necessary components are replaced or adjusted. Special care should be taken in measuring around the magnetron.

WARNING

Avoid contacting any high voltage parts.

(2) Measurements with a fully assembled oven.

After all components, including the outer panel are fully assembled, measure for radiation leakage around the door periphery, the door viewing window, the exhaust opening and air inlet openings.

3. Record keeping and notification after measurement

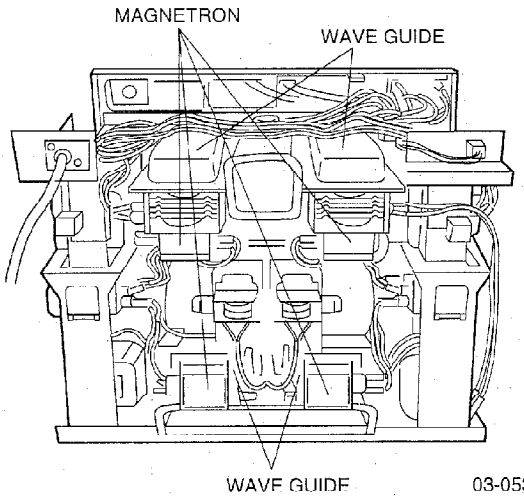
(A) After any adjustment or repair to a microwave oven, a leakage reading must be taken. Record this leakage reading on the repair ticket even if it is zero.
A copy of this repair ticket and the microwave leakage reading should be kept by repair facility.

(B) Should the radiation leakage be more than 2 mw/cm after determining that all parts are in good condition, functioning properly, and genuine replacement parts as listed in this manual have been used, immediately notify PASC or PSC.

4. At least once a year, have the radiation monitor checked for calibration by its manufacturer.

WARNING

AVOID CONTACTING ANY HIGH VOLTAGE PARTS.



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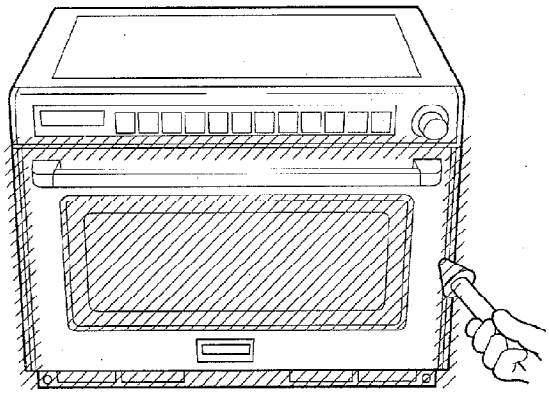


03-050M

MOVE PROBE ALONG SHADED AREA (////) AROUND EXHAUST OPENINGS (as shown) AND AROUND AIR INLET OPENING

TROUBLESHOOTING GUIDE

CAUTION

1. Check grounding before checking for trouble.
2. Be cafeful of the high voltage circuit.
3. Discharge high voltage capacitor.
4. When checking the continuity of the switches or the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
   When disconnecting a plastic connector from a terminal, you must hold the plastic connector instead of the lead wire and then disconnect it, otherwise lead wire may be open or the connector cannot be removed.
5. Be sure to ground any static electric charge built up in your body, before handling the D.P.C.
6. A 208-230V AC is present at the shaded area ▨ of the power supply circuit board (Terminals of power relays and primary circuit of low voltage transformer). When troubleshooting, be cautious of possible electrical shock hazard.

First of all operate the microwave oven following the correct operating procedures described on pages 4 of this service manual in order to find the exact cause of any trouble.

NOTE: If the unit shows faulty symptom as shown below, check the parts listed in possible cause column depending on failure indication e.g. F81, F82 in the display.

[TROUBLE] Oven does not operate at all or oven does not start cooking. NE-2680R, NE-2780

DISPLAY	CONDITIONS	POSSIBLE CAUSE	TIMING OF FAILURE INDICATION
F33	Open temperature sensor (exhaust)	1.Temperature sensor failure 2.Digital programmer circuit failure 3.Loose connector CN5	It is appeared when failure occured.
F34	Short temperature sensor (exhaust)	1.Temperature sensor failure 2.Digital programmer circuit failure	It is appeared when failure occured.
F44		1.Shorted membrane switch	It is appeared 2 minutes after failure occured.
F01 (With continuous beep sounds)	Exhaust temperature exceeds 120°C	1.Burning food in the oven due to over cook	It is appeared when exhaust temperature exceeds above 120°C
F03	Input voltage exceed + 12.5%	1.Increase in power source voltage	It is appeared when the unit is plugged in. Note that it returns normal operation mode by tapping the STOP pad.
F04	Input voltage is less than – 12.5%	1.Decrease in power source voltage	It is appeared when the unit is plugged in. Note that it returns normal operation mode by tapping the STOP pad.
F05	Memory failure	1.Digital programmer circuit failure	
No display	1.25A fuse blown	1.Low-Voltage transformer failure	
No display	1.25A fuse is OK	1.Thermal cutout failure 2.Low voltage transformer failure 3.Digital programmer circuit failure	
F81	No voltage supply to high voltage trans. (lower/left)	1.Relay failure RY-3 (A) 2.Loose connector CN256, CN257 3.Digital programmer circuit failure	It is appeared when failure occured.
F82	No voltage supply to high voltage trans. (lower/right)	1.Relay failure RY-5 (B) 2.Loose connector CN258, CN259 3.Digital programmer circuit failure	It is appeared when failure occured.

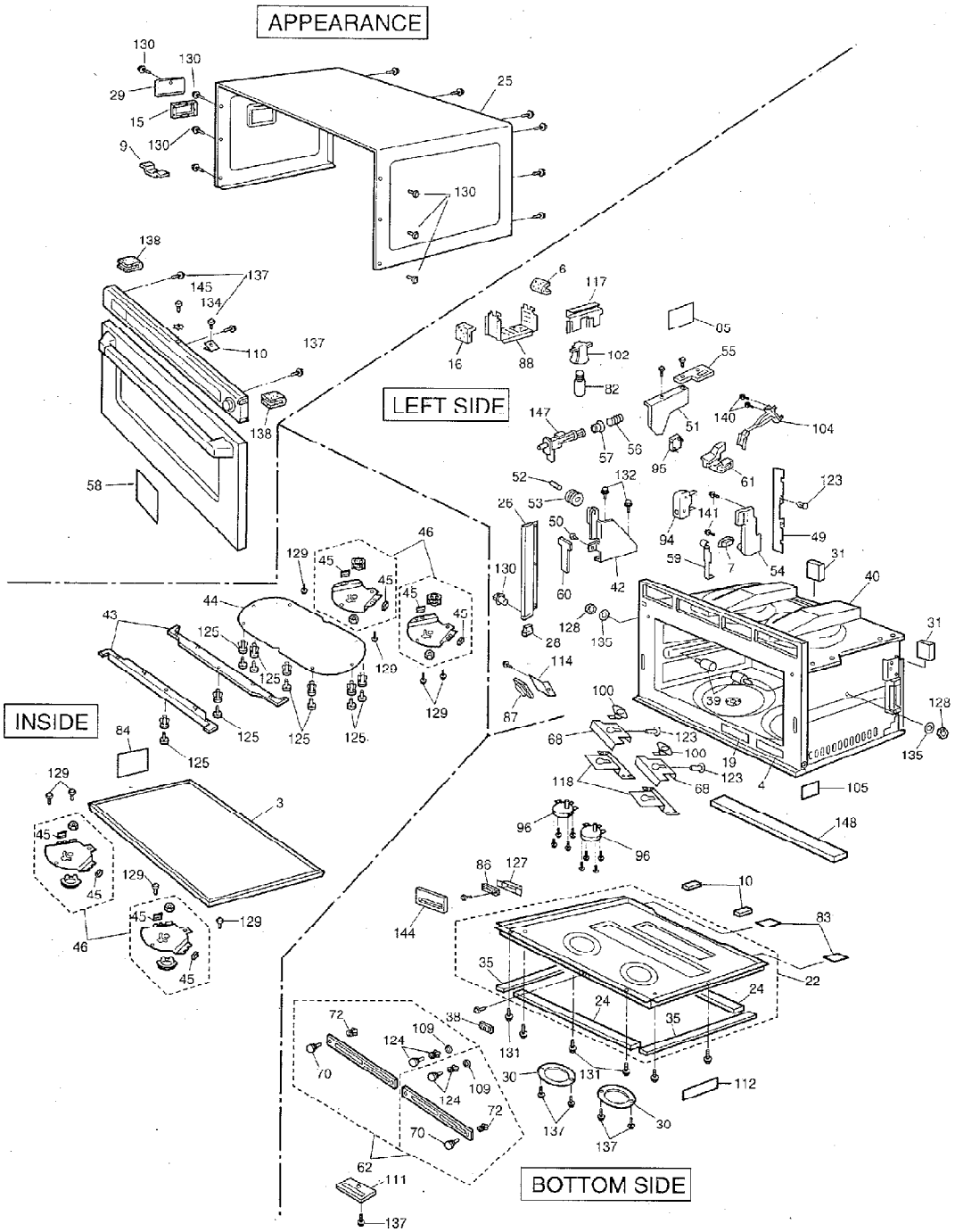
DISPLAY	CONDITIONS	POSSIBLE CAUSE	TIMING OF FAILURE INDICATION
F83	No voltage supply to high voltage trans. (upper/left)	1.Relay failure RY-7 (C) Loose connector CN260, CN261 2.Digital programmer circuit failure	It is appeared when failure occured.
F84	No voltage supply to high voltage trans. (upper/right)	1.Relay failure RY-9 (D) Loose connector CN262, CN263 2.Digital programmer circuit failure	It is appeared when failure occured.
F86	Shorted contacts of RY-3	1.Relay failure RY-3 (A) 2.Digital programmer circuit failure	It is appeared when failure occured.
F87	Shorted contacts of RY-5	1.Relay failure RY-5 (B) 2.Digital programmer circuit failure	It is appeared when failure occured.
F88	Shorted contacts of RY-7	1.Relay failure RY-7 (C) 2.Digital programmer circuit failure	It is appeared when failure occured.
F89	Shorted contacts of RY-9	1.Relay failure RY-9 (D) 2.Digital programmer circuit failure	It is appeared when failure occured.

[TROUBLE] Oven does not operate at all or oven does not start cooking. NE-1780R, NE-1880

DISPLAY	CONDITIONS	POSSIBLE CAUSE	TIMING OF FAILURE INDICATION
F33	Open temperature sensor (exhaust)	1.Temperature sensor failure 2.Digital programmer circuit failure 3.Loose connector CN5	It is appeared when failure occured.
F34	Short temperature sensor (exhaust)	1.Temperature sensor failure 2.Digital programmer circuit failure	It is appeared when failure occured.
F44		1.Shorted membrane switch	It is appeared 2 minutes after failure occured.
F01 (With continuous beep sounds)	Exhaust temperature exceeds 120°C	1.Burning food in the oven due to over cook	It is appeared when exhaust temperature exceeds above 120°C
F03	Input voltage exceed + 12.5%	1.Increase in power source voltage	It is appeared when the unit is plugged in. Note that it returns normal operation mode by tapping the STOP pad.
F04	Input voltage is less than – 12.5%	1.Decrease in power source voltage	It is appeared when the unit is plugged in. Note that it returns normal operation mode by tapping the STOP pad.
F05	Memory failure	1.Digital programmer circuit failure	
No display	1.25A fuse blown	1.Low-Voltage transformer failure	
No display	1.25A fuse is OK	1.Thermal cutout failure 2.Low voltage transformer failure 3.Digital programmer circuit failure	
F81	No voltage supply to high voltage transformer (left)	1.Relay failure RY-3 (A) 2.Loose connector CN256, CN257 3.Digital programmer circuit failure	It is appeared when cooking is completed.
F84	No voltage supply to high voltage transformer (right)	1.Relay failure RY-9 (D) 2.Loose connector CN262, CN263 3.Digital programmer circuit failure	It is appeared when cooking is completed.
F86	Shorted contacts of RY-3	1.Relay failure RY-3 (A) 2.Digital programmer circuit failure	It is appeared when failure occured.
F89	Shorted contacts of RY-9	1.Relay failure RY-9 (D) 2.Digital programmer circuit failure	It is appeared when failure occured.

EXPLODED VIEW AND PARTS LIST

EXPLODED VIEW



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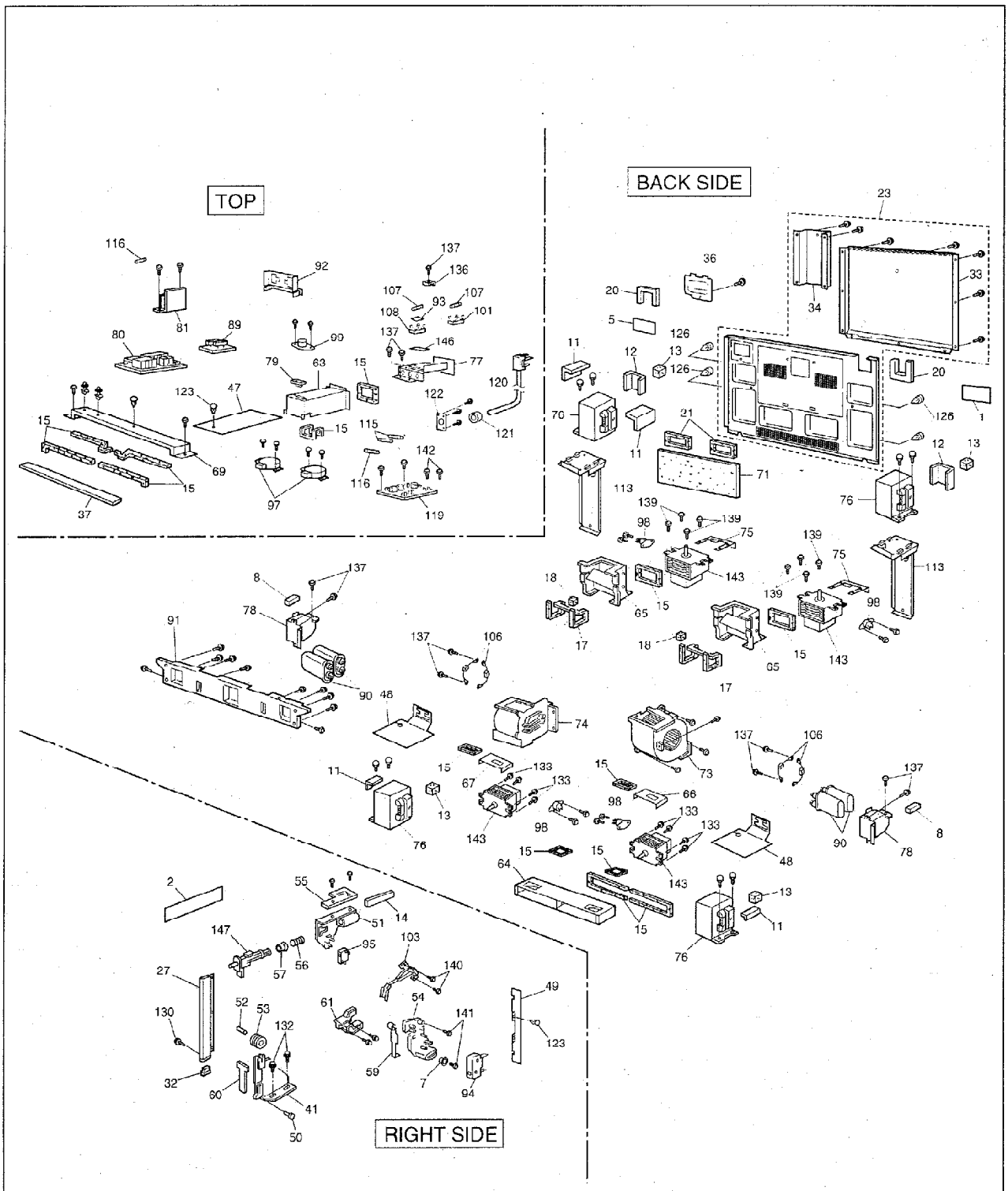

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PARTS LIST

NOTE : When ordering replacement part(s), please use part number(s) shown in this parts list.
Do not use description of the part.
Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
Items marked * supplied by MMCA. (U.S.A.)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
1		A00063040AP	CAUTION LABEL	1	NE-2680R,NE-1780R
1		ANE00068U0CP	CAUTION LABEL	1	NE-2780,NE-1880
2		A00333570AP	FUSE LABEL	1	NE-2680R,NE-1780R
2		A00333570CP	FUSE LABEL	1	NE-2780,NE-1880
3		A010T3030GP	SHELF	1	
4		A04115020CQ	CSA LABEL	1	NE-2780,NE-1880
5		A05103040AP	CAUTION LABEL	1	NE-2680R,NE-1780R
5		A05103570CP	CAUTION LABEL	1	NE-2780,NE-1880
6		ANE0902000DB	CUSHION RUBBER A	1	
7		A64083040AP	WASHER	2	
8		ANE0911000DC	CUSHION RUBBER B	2	NE-2680R,NE-2780
9		ANE0911000DF	CUSHION RUBBER B	1	
10		ANE0911000EG	CUSHION RUBBER B	2	
11		ANE0911000EH	CUSHION RUBBER B	4	NE-2680R,NE-2780
11		ANE0911000EH	CUSHION RUBBER B	2	NE-1780R,NE-1880
12		ANE0911000MG	CUSHION RUBBER B	2	NE-2680R,NE-2780
13		ANE0917000EB	CUSHION RUBBER B	2	
14		ANE0921000CG	CUSHION RUBBER C	1	
15		ANE000Z000AA	CUSHION RUBBER C	15	
16		ANE0922000JE	CUSHION RUBBER C	1	
17		ANE000Z000AB	CUSHION RUBBER C	2	
18		ANE0924000AB	CUSHION RUBBER C	2	
19		ANE01728U0CP	CAUTION LABEL	1	NE-2780,NE-1880
20		ANE0961000ZL	CUSHION RUBBER D	2	
21		ANE0963000AS	CUSHION RUBBER D	2	
22		A100A3560BP	BASE	1	(NOTE 1)
23		A100Q3560GP	BACK PANEL	1	
24		A10083030GP	RUBBER FOOT	2	
25		A10093030GP	CABINET BODY (U)	1	
26		A10133030GP	LEFT SIDE SASH	1	
27		A10143030GP	RIGHT SIDE SASH	1	
28		A10203030GP	SASH RUBBER B	1	LEFT
29		A10263060AR	LAMP COVER (U)	1	
30		A10283030GP	ANTENNA MOTOR COVER	2	
31		A10493030GP	CUSHION RUBBER	2	
32		A10503030GP	SASH RUBBER A	1	RIGHT
33		A10583560GP	BACK PANEL COVER A	1	
34		A10593560GP	BACK PANEL COVER B	1	
35		A10943030GP	RUBBER FOOT B	2	
36		ANE11548U0AP	BACK PANEL COVER	1	
37		A11743060GP	SPACER	1	
38		A16163040AP	PANEL B (U)	1	
39		A18593560GP	SHELF SUPPORT	2	
40	⚠	A200A3560GP	OVEN	1	(NOTE 2)
41		A200P3030GP	ROLLER BRACKET A	1	RIGHT
42		A200Q3030GP	ROLLER BRACKET B	1	LEFT
43		A20103030GP	CEILING PLATE B	2	
44	⚠	A20113030GP	CEILING PLATE	1	
45		A20193030GP	ANTENNA STOPPER	8	
46		A202R3560GP	ANTENNA (U)	4	
47		A22173030GP	BARRIER SHEET A	1	
48		A22183030GP	BARRIER SHEET B	2	NE-2680R,NE-2780
49		A22193030GP	BARRIER SHEET C	2	NE-2680R,NE-2780
49		A22193030GP	BARRIER SHEET C	1	NE-1780R,NE-1880

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Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
50		ANE3008P00RN	HINGE PIN	2	
51	⚠	A30203030GP	DOOR HOOK A	2	
52		ANE3033-560	DOOR ROLLER PIN	2	
53		ANE3034-560	DOOR GUIDE ROLLER	2	
54		A31123050GP	DOOR HOOK B	2	
55		A31363030GP	HOOK SPACER A	2	
56		ANE3155-610	SPRING	2	
57		ANE3157-610	PACKING RUBBER	2	
58		A31863570AP	DOOR PANEL	1	NE-2680R
58		A31863570CP	DOOR PANEL	1	NE-2780
58		A31863590AP	DOOR PANEL	1	NE-1780R
58		A31863590GP	DOOR PANEL	1	NE-1880
59		A32493030GP	DOOR SWITCH LEVER	2	
60		A32523030GP	DOOR ARM SPACER	2	
61		A33373030GP	DOOR ARM LEVER	2	
62		A400B3040AP	AIR FILTER FLAME	2	
63		A400C3040AP	EXHAUST GUIDE B	1	
64		A402N3030GP	EXHAUST GUIDE A	1	
65		A40253030GP	AIR GUIDE A	2	
66		A40263030GP	AIR GUIDE B	1	
67		A40313030GP	AIR GUIDE C	1	
68		A40423040AP	AIR GUIDE F	2	
69		A40473560GP	AIR GUIDE E	1	
70		A40923030GP	FILTER HANDLE	2	
71		A40963030GP	INSULATION SHEET	1	
72		ANE42408U0AP	FILTER HANDLE B	2	
73		A490W3040AP	FAN MOTOR	1	60W
74		A490Y3040AP	FAN MOTOR B	1	60W
75		ANE50328U0AP	MAGNETRON BRACKET	2	
76	⚠	A600B3570AP	H.V.TRANSFORMER	4	NE-2680R,NE-2780 1.4KVA
76	⚠	A600B3590AP	H.V.TRANSFORMER	2	NE-1780R,NE-1880 1.7KVA
77		A600E3030GP	TERMINAL PLATE	1	
78		A600S3030GP	CAPACITOR BRACKET	2	
79		A601L4000AP	TEMP SENSOR	1	
80		A603M3560BP	PC BOARD B (U)	1	NE-2680R
80		A603M3570CP	PC BOARD B (U)	1	NE-2780
80		A603M3580GP	PC BOARD B (U)	1	NE-1780R
80		A603M3590CP	PC BOARD B (U)	1	NE-1880
81		A603Y3570AP	L.V.TRANSFORMER (U)	1	NE-2680R
81		A603Y3570CP	L.V.TRANSFORMER (U)	1	NE-2780,NE-1880
81		A603Y3590AP	L.V.TRANSFORMER (U)	1	NE-1780R
82		A60304080BP	INCANDESCENT LAMP	1	20W/240V
83		ANE6040-730	OVEN LAMP SHEET	2	
84		A60403030GP	OVEN LAMP SHEET	1	
85		A60403040AP	OVEN LAMP SHEET	1	
86		A605Q3030GP	PUSH SWITCH	1	
87		A605S3030GP	PC BOARD H (U)	1	
88		A60733030GP	OVEN LAMP COVER	1	
89		A608E3560GP	PC BOARD Q(U)	1	NE-2680R,NE-2780
90	⚠	A60903040AP	H.V.CAPACITOR	4	NE-2680R,NE-2780 (0.85MF,AC2200V)
90	⚠	A60903070BP	H.V.CAPACITOR	4	NE-1780R,NE-1880 (0.53MF,AC2000V)
91	⚠	A61073030GP	PARTS BRACKET B	1	
92		A61143040AP	MOUNTING BRACKET	1	
93		A6116-2160	TERMINAL BOARD	1	NE-1780R,NE-1880,NE-2680R
94	⚠	ANE6142-F60	MICROSWITCH	2	(V-15G-3C26) SECONDARY INTERLOCK S.W.
95	⚠	ANE61424L0AG	MICROSWITCH	2	(V-16G-3C26) PRIMARY INTERLOCK S.W.
96		A6144-3280	ANTENNA MOTOR	2	(2.5W) LOWER
97		A61446030AP	ANTENNA MOTOR	2	(2.5W) UPPER
98	⚠	A61453030GP	THERMAL CUTOUT	4	FOR MAGNETRON NE-2680R,NE-1780R
98	⚠	A61453570CP	THERMAL CUTOUT	4	FOR MAGNETRON NE-2780,NE-1880
99	⚠	A61454000AP	THERMAL CUTOUT	1	FOR OVEN
100	⚠	A61454050AP	THERMAL CUTOUT	2	FOR ANTENNA MOTOR
101		A62314000AP	FUSE HOLDER	1	NE-2680R

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Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
102	⚠	A61524210AA	SOCKET	1	
103	⚠	A61583030GP	DOOR SWITCH	1	MONITOR S.W. (RIGHT)
104	⚠	A61583050GP	DOOR SWITCH	1	MONITOR S.W. (LEFT)
105		A61703030GP	INSULATION SHEET C	1	
106	⚠	A62024000AP	DIODE,SI	4	
107	⚠	ANE6230P30AP	FUSE	1	NE-1780R,NE-1880 20A
107	⚠	ANE6595P40AP	FUSE	2	NE-2680R (15A)
108		ANE6231-F50	FUSE HOLDER	1	NE-1780R,NE-1880,NE-2680R
109		A62383030GP	SPACER	2	
110		ANE64086Q0AP	WASHER	1	
111		A65313030GP	SWITCH HOLDER	1	
*112		B00073570AP	NAME LABEL	1	NE-2680R
*112		B00073590AP	NAME LABEL	1	NE-1780R
113		A65513030GP	H.V.T.MOUNTING	2	NE-2680R,NE-2780
114		A65613030GP	BUZZER CASE	1	
115	⚠	ANE6595P40AP	FUSE	2	NE-2780 15A
115	⚠	ANE6230P40AP	FUSE B	2	NE-1880 10A
116	⚠	A65953170GP	FUSE B	1	1.25A
117		A66033040AP	OVEN LAMP BRACKET	1	
118		A66263040AP	THERMAL CUTOUT MOUNT	2	
119		A692Y3570AP	NOISE FILTER (U)	1	NE-2680R
119		A692Y3570CP	NOISE FILTER (U)	1	NE-2780
119		A692Y3590CP	NOISE FILTER (U)	1	NE-1880
*120	⚠	B900C3570AP	AC CORD W/PLUG	1	NE-2680R,NE-2780 (230/208V)
120	⚠	A900C3060AP	AC CORD W/PLUG	1	NE-1780R (230/208V)
120	⚠	A900C3590CP	AC CORD W/PLUG	1	NE-1780R (230/208V)
*121		B90273570AP	CORD BUSHING	1	
122		A90353040AP	CORD BRACKET	1	NE-1780R,NE-1880
122		A90353570AP	CORD BRACKET	1	NE-2680R,NE-2780
123		ANE9080-730	CLIP (YELLOW)	5	NE-2680R,NE-2780
123		ANE9080-730	CLIP (YELLOW)	4	NE-1780R,NE-1880
124		ANE90828U0AP	CLIP (BLACK)	2	
125		ANE9082930AP	CLIP	8	
126		A91433040AP	CLIP	4	NE-1780R,NE-1880
127		A98363030GP	CASE	1	
128		XNW5EFN	NUT	2	FOR SHELF SUPPORT
129		XST4+6VS	SCREW	8	(4X6) FOR ANTENNA
130		XTC4+10BC	SCREW	9	(4X10) FOR CABINET BODY,LAMP COVER,SASH
131		XTC4+12BK	SCREW (BLACK)	3	(4X12) FOR BASE
132		XTEANE5+10B	SCREW	4	(5X10) FOR ROLLER BRACKET
133		XTWANE4+10RU	SCREW	8	(4X10) FOR MAGNETRON LOWER
134		XWC4BPN	WASHER	1	FOR ESCUTCHEON BASE
135		XWG5BV	WASHER	2	FOR SHELF SUPPORT
136		XWNANE53GV	SPACER	1	FOR TERMINAL PLATE
137		XYD4+EE12F	SCREW	19	(4X12) FOR TERMINAL PLATE,EARTH, ANTENNA MOTOR COVER,SWITCH HOLDER, DIODE,CAPACITOR BRACKET, ESCUTCHEON BASE
138		ANE09620007F	CUSHION RUBBER D	1	
139		XYEANE5+C16T	SCREW	8	(5X16) FOR MAGNETRON UPPER
140		XYN4+F12S	SCREW	4	(4X12) FOR DOOR SWITCH
141		XYN4+F18S	SCREW	4	(4X18) FOR DOOR HOOK B
142		XYN5+C8BN	SCREW	2	NE-2680R,NE-2780 (5X8) FOR NOISE FILTER
143	⚠	2M210-M1EL	MAGNETRON	4	
144		A83613030GP	SWITCH SPACER	1	
145		XTC4+10FC	SCREW	1	(4X10) FOR ESCUTCHEON BASE
146		ANE81505V0V	TERMINAL LABEL B	1	
147		A30183030GP	DOOR KEY A	2	
148		A80163060GP	CUSHION SPACER	1	

NOTE 1 : Please order name plate together.

2 : Please order CSA label together. (For CPR Model)

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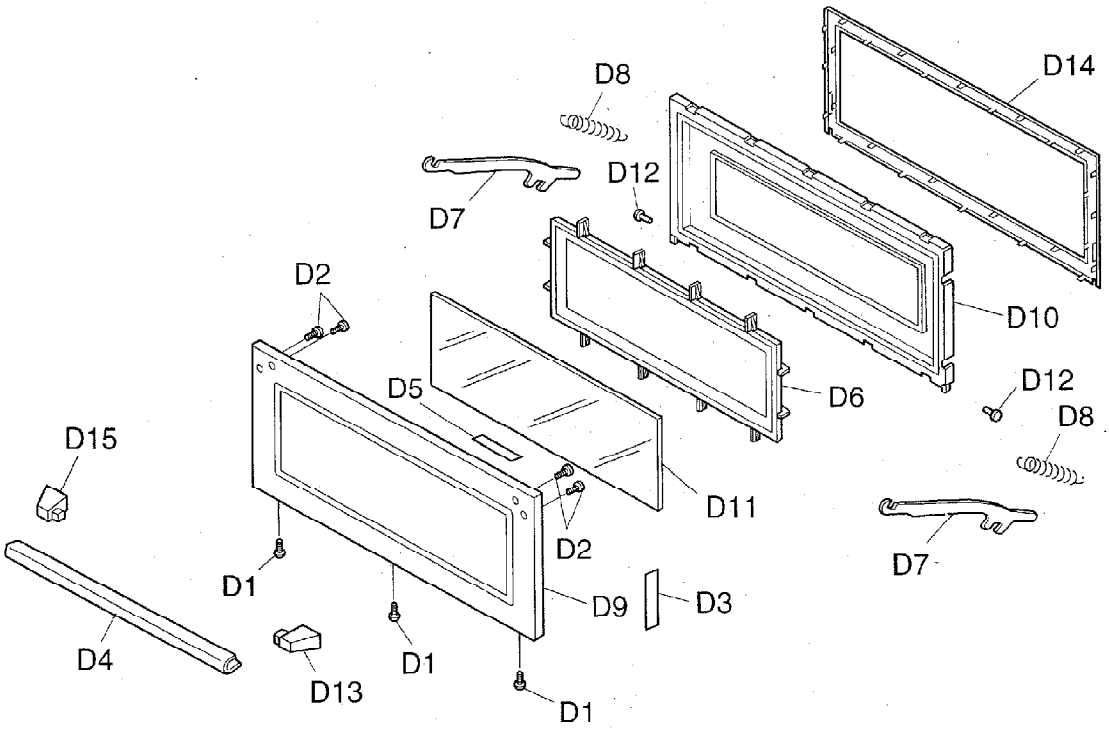
DOOR ASSEMBLY

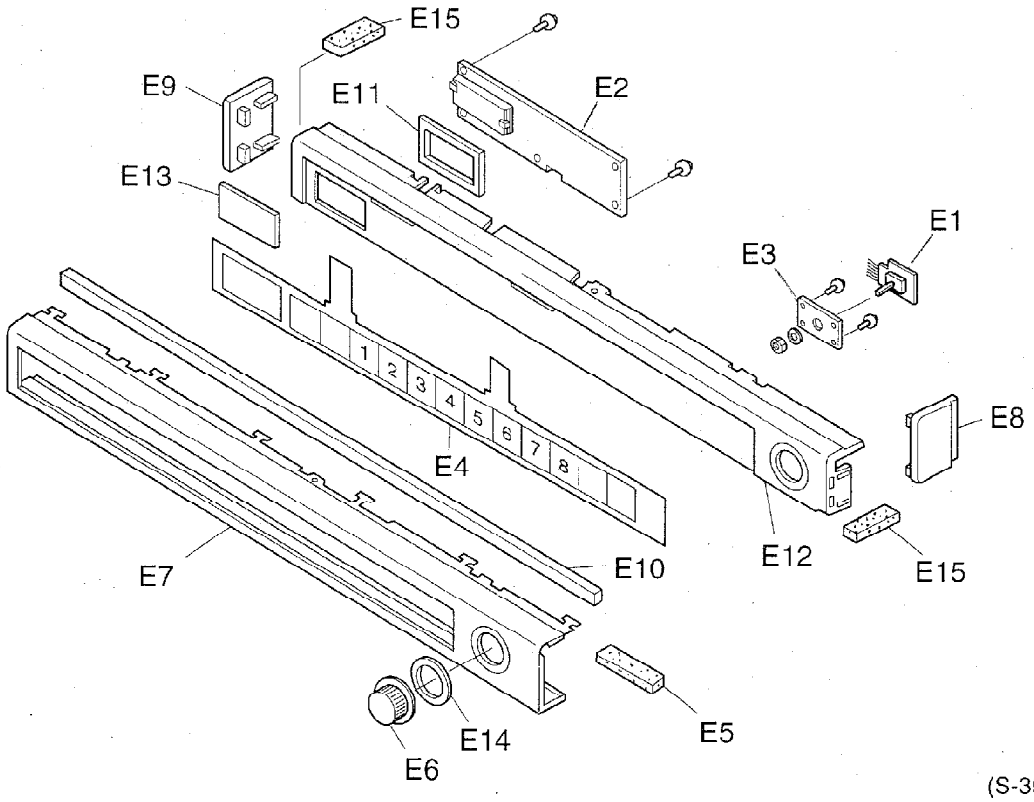


(S-357 APR)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
D1		XTC4+10BC	SCREW	3	4X10
D2		XYEANE4+C16T	SCREW	4	4X16
D3		ANE0245X00AP	DHHS LABEL	1	NE-2680R,NE-1780R
D4		A302J3040AP	HANDLE PEICE C (U)	1	
D5		ANE01728U0CP	CAUTION LABEL	1	NE-2680R,NE-1780R
D6		A30033030GP	DOOR FRAME	1	
D7		A30043030GP	DOOR ARM	2	
D8		ANE3009P00RN	DOOR SPRING	2	
D9	⚠	A301A3030GP	DOOR A	1	(NOTE 3)
D10	⚠	A302K3030GP	DOOR E (U)	1	
D11		A31463030GP	DOOR SCREEN B	1	
D12		ANE3036P00RN	DOOR ARM PIN	2	
D13		A30703030GP	HANDLE PEICE A	1	
D14	⚠	A30853030GP	DOOR C	1	
D15		A31343030GP	HANDLE PEICE B	1	

NOTE 3 : Please order DHHS label together. (For APR Model)

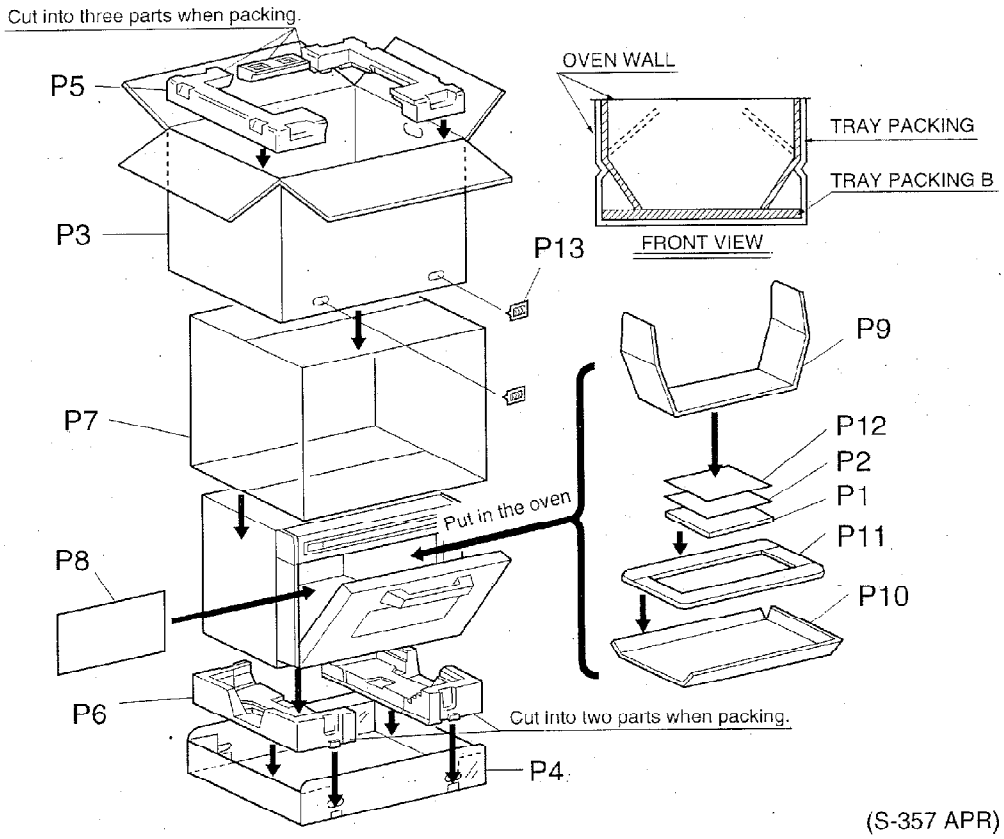
ESCUTCHEON BASE ASSEMBLY



(S-357 APR)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
E1		A03613560GP	TIMER	1	
E2		A603L3590GP	D.P.CIRCUIT (U)	1	RTL (W/COMPONENT)
E3		A63433030GP	TIMER BRACKET	1	
E4		A64793570AP	MEMBRANE SWITCH	1	
E5		ANE0911000AB	CUSHION RUBBER	1	
E6		A800D3060GP	TIMER KNOB	1	
E7		A80013060GP	ESCUTCHEON A	1	
E8		A80023030GP	ESCUTCHEON B	1	
E9		A80063030GP	ESCUTCHEON D	1	
E10		A80163030GP	ESCUTCHEON SPACER	1	
E11		A83423060GP	CUSHION RUBBER B	1	
E12		A80343060GP	ESCUTCHEON BASE	1	
E13		A81263060GP	SMOKE PANEL	1	
E14		A82873030GP	SPACER A	1	
E15		ANE0961000ZE	CUSHION RUBBER D	2	

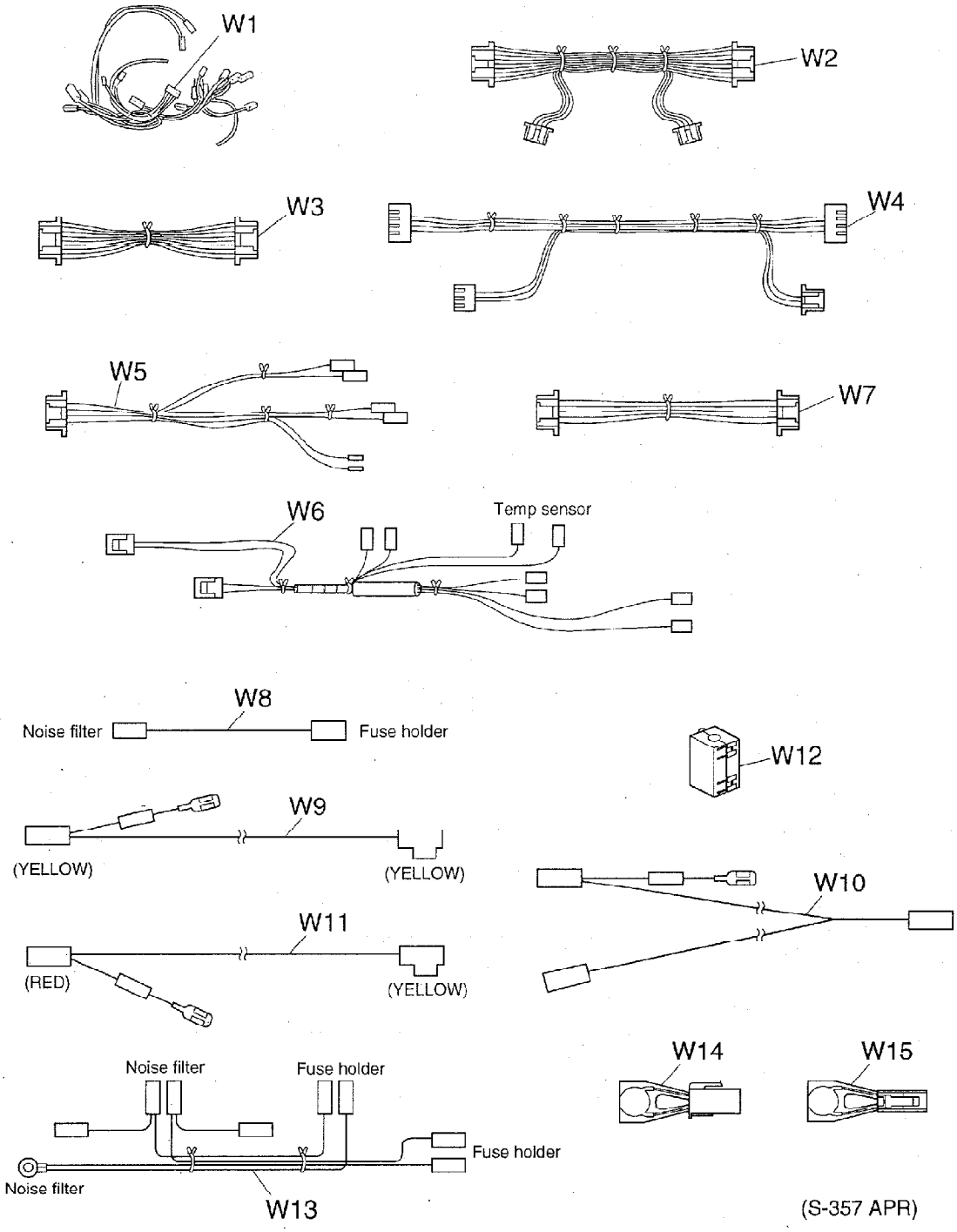
PACKING AND ACCESSORIES



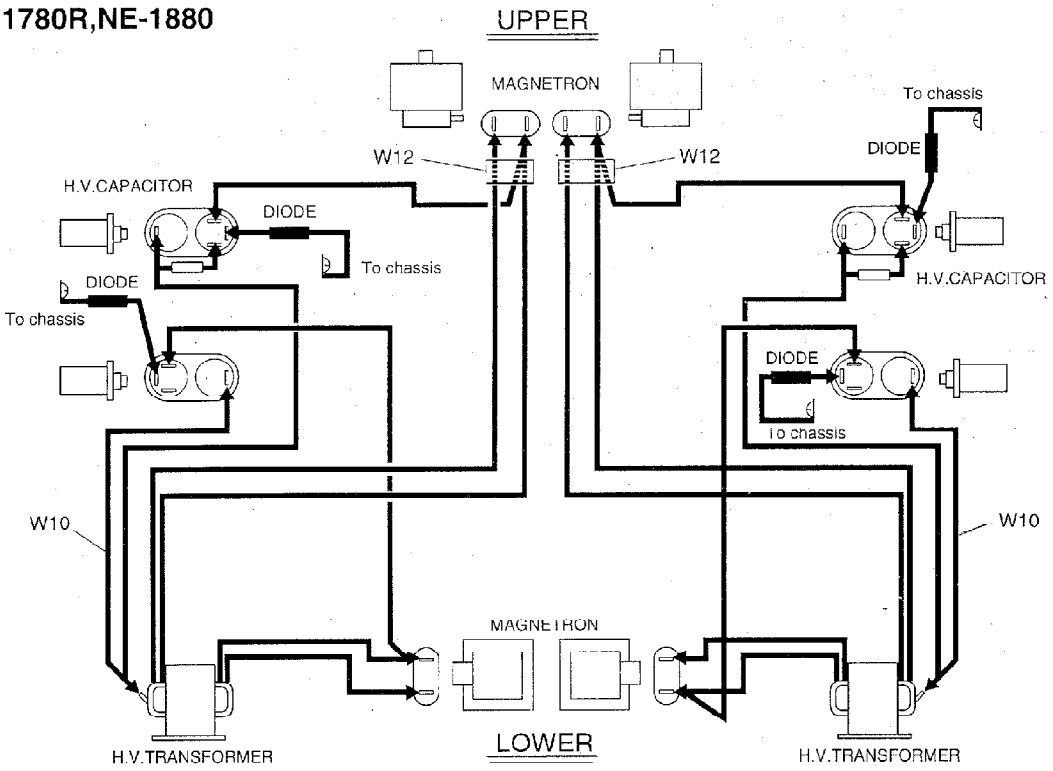
(S-357 APR)

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
P1		A00033570AP	INSTRUCTION BOOK	1	NE-2680R,NE-1780R
P1		A00033570CP	INSTRUCTION BOOK	1	NE-2780,NE-1880
P2		A00873040AP	MENU CARD	1	
P3		A01023570AP	PACKING CASE,PAPER	1	NE-2680R
P3		A01023570CP	PACKING CASE,PAPER	1	NE-2780
P3		A01023590AP	PACKING CASE,PAPER	1	NE-1780R
P3		A01023590CP	PACKING CASE,PAPER	1	NE-1880
P4		A01033030GP	BOTTOM CASE	1	
P5		A01043030GP	UPPER FILLER	1	
P6		A01053030GP	LOWER FILLER	1	
P7		A01063040AP	VINYL COVER	1	
P8		A01073030GP	DOOR SHEET	1	
P9		A01083030GP	TRAY PACKING	1	
P10		A01173030GP	TRAY PACKING B	1	
P11		A012D3050GP	SHELF B	1	
P12		A04203570AP	OPERATING GUIDE	1	
P13		HP-601W	FASTENER	4	

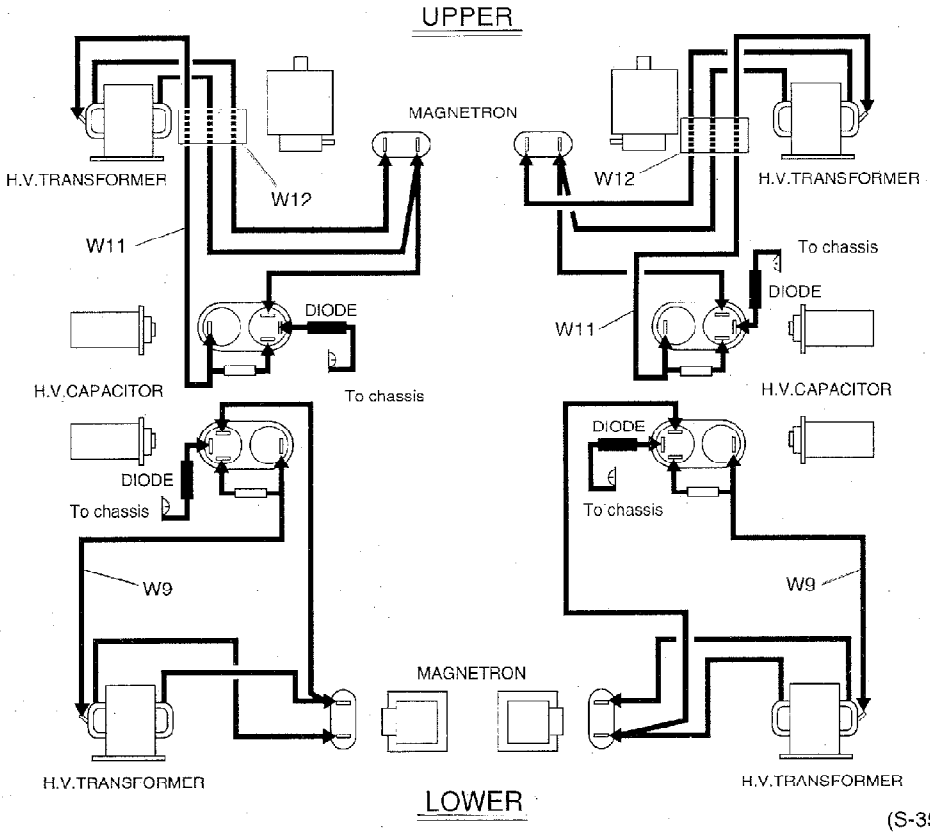
WIRING MATERIAL



NE-1780R,NE-1880



NE-2680R,NE-2780



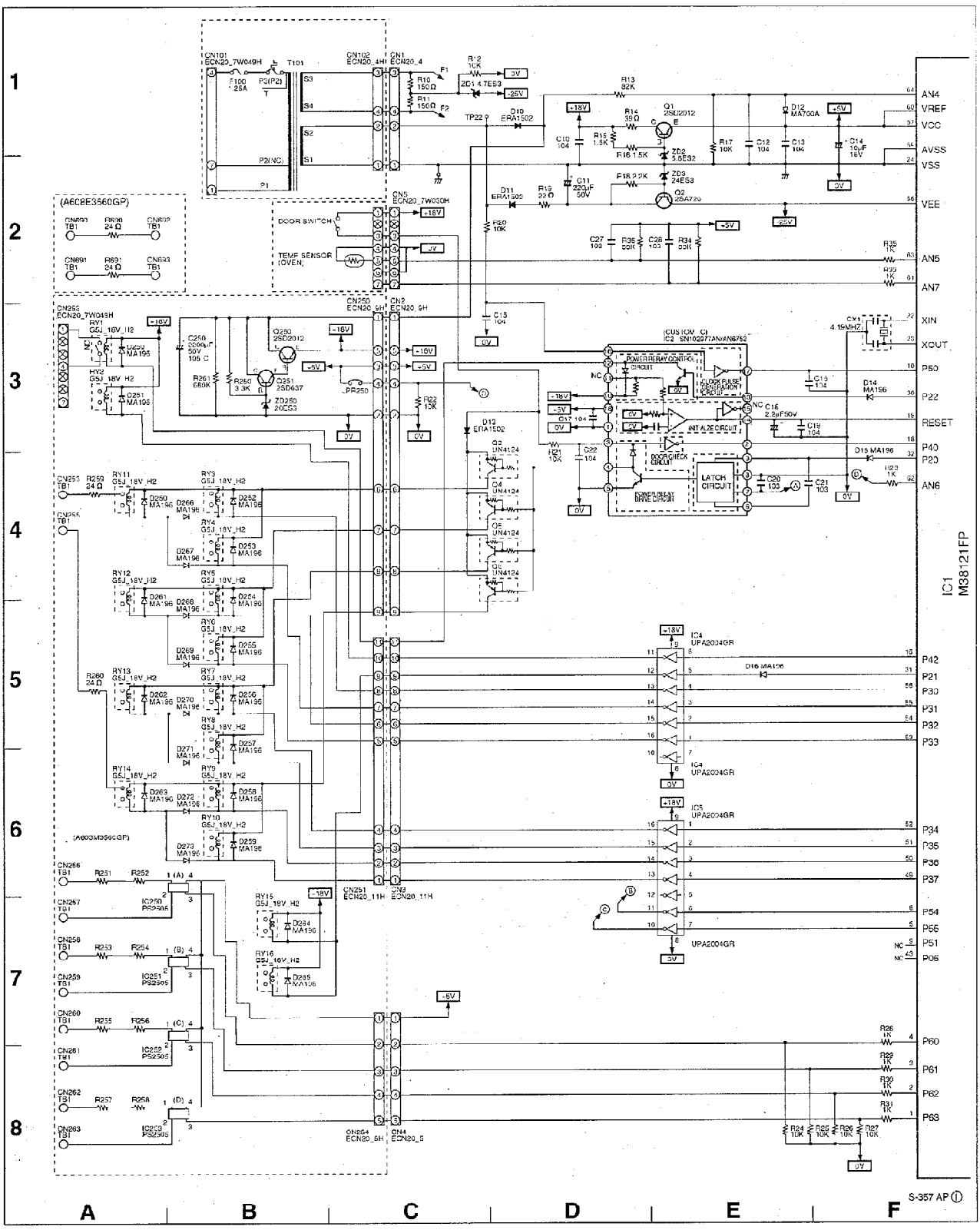
(S-357 APR)

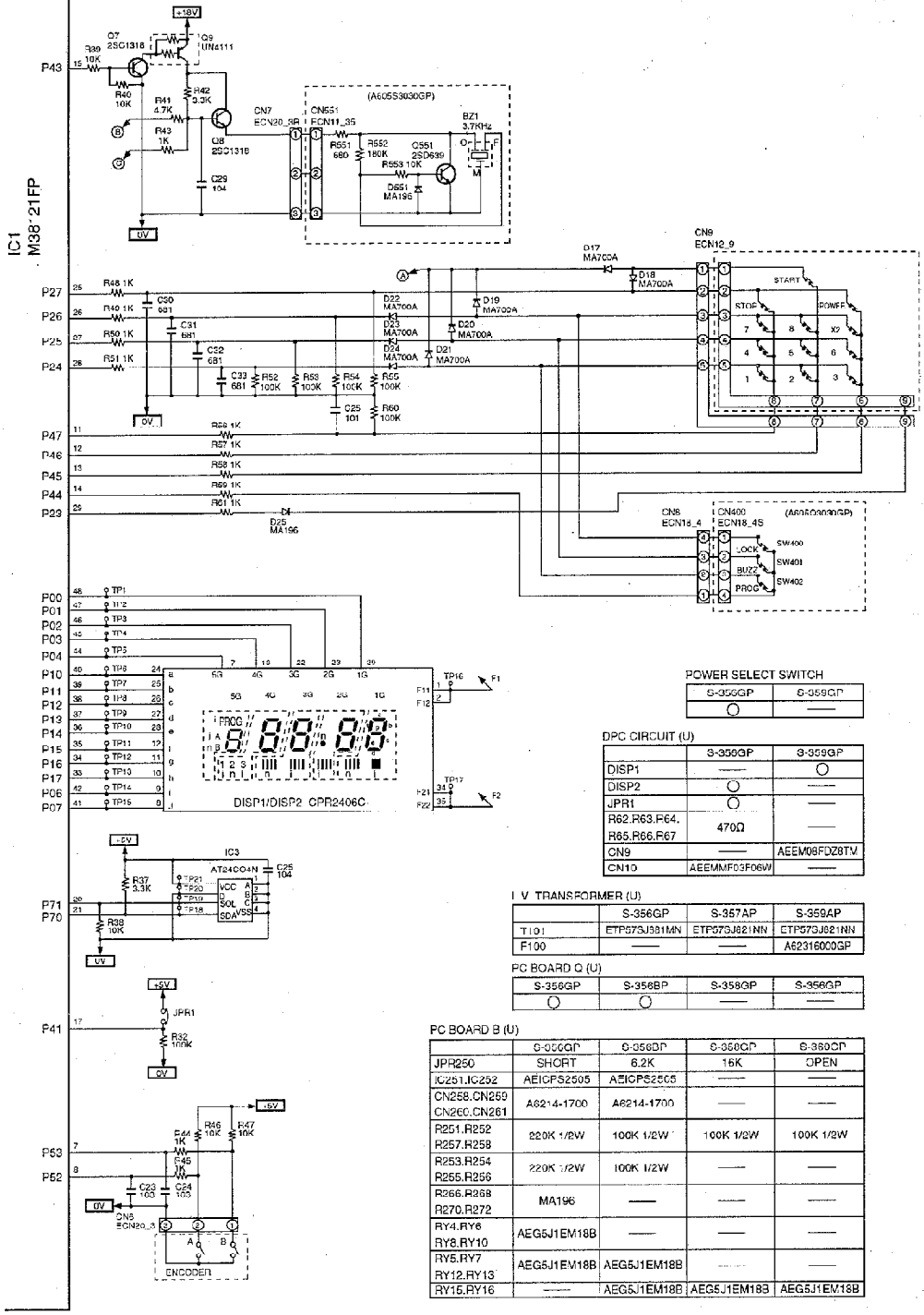
Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
W1		A030A3570AP	LEAD WIRE HARNESS	1	NE-2680R
W1		A030A3570CP	LEAD WIRE HARNESS	1	NE-2780
W1		A030A3590AP	LEAD WIRE HARNESS	1	NE-1780R (W/SURGE ABSORBER)
W1		A030A3590CP	LEAD WIRE HARNESS	1	NE-1880
W2		A03603560GP	LEAD WIRE	1	
W3		A03623560GP	LEAD WIRE	1	
W4		A03633560GP	LEAD WIRE	1	
W5		A03653560GP	LEAD WIRE	1	
W6		A03693560GP	LEAD WIRE	1	
W7		A03703560GP	LEAD WIRE	1	NE-2680R,NE-2780
W8		A03783030GP	LEAD WIRE	1	NE-1880
W9		A606V3560GP	PROTECTOR DIODE	2	NE-2680R,NE-2780
W10		A606V3580GP	PROTECTOR DIODE	2	NE-1780R,NE-1880
W11		A606W3560GP	PROTECTOR DIODE B	2	NE-2680R,NE-2780
W12		A50966520UP	FERITE CORE	2	NE-2780,NE-1880
W13		A03663570AP	LEAD WIRE	2	NE-2680R
W14		A604Q3570AP	SURGE ABSORBER A	1	NE-1780R
W15		A604Q3590AP	SURGE ABSORBER B	1	NE-1780R

Ref. No.		Part No.	Part Name & Description	Pcs/ Set	Remarks
REF NO. 80 P. C. BOARD B (U)					
		AEGHPUG3640	HEAT SINK	1	
		XYN3+F8S6	SCREW	1	3X8
		2SD2012	TRANSISTOR,SI	1	
C250		ECA1HHG222E	ELECTROLYTIC CAPACITOR,AL	1	2200MF/50V
CN250		AEEMMD1FF09W	CONNECTOR	1	9PIN
CN251		AEEMMD7FF11N	CONNECTOR	1	11PIN
CN252		AEEMMD04907W	CONNECTOR	1	7PIN
CN254		AEEMMD01F05W	CONNECTOR	1	5PIN
D250,251, 252,253,254, 255,256,257, 258,259,260, 261,262,263, 264,265,267, 269,271,273		MA196-(TA5)	DIODE,SI	20	
IC250,251, 252,253		AEICPS2505	IC	4	NE-2680R,NE-2780
IC250,253		AEICPS2505	IC	2	NE-1780R,NE-1880
JPR250		ERDS2TJ163T	CARBON FILM RESISTOR	1	NE-1780R,NE-1880 16KΩ,1/4W,5%
JPR250		ERDS2TJ622T	CARBON FILM RESISTOR	1	NE-2680R,NE-2780 6.2KΩ,1/4W,5%
Q251		2SD637-PQRS	TRANSISTOR,SI	1	
R250		ERDS2TJ332T	CARBON FILM RESISTOR	1	3.3KΩ,1/4W,5%
R251,252, 253,254,255, 256,257,258		ERDS1TJ104T	CARBON FILM RESISTOR	8	NE-2680R,NE-2780 100KΩ,1/2W,5%
R251,252, 257,258		ERDS1TJ104T	CARBON FILM RESISTOR	4	NE-1780R,NE-1880 100KΩ,1/2W,5%
R259,260		ERF15ZXJ240	RESISTOR	2	24Ω,15W,5%
R261		ERDS2TJ684T	CARBON FILM RESISTOR	1	680KΩ,1/4W,5%
RY1	⚠	AEBG5B18P-1	POWER RELAY	1	
RY2,3,5,7,9, 11,12,13,14, 15,16	⚠	AEG5J1EM18B	POWER RELAY	11	NE-2680R,NE-2780
RY2,3,9,11, 14,15,16	⚠	AEG5J1EM18B	POWER RELAY	7	NE-1780R,NE-1880
ZD250		AEDZ20ES3T1	DIODE,SI	1	
REF NO. 87 P. C. BOARD H (U)					
BZ		EFBRL37C20	BUZZER	1	3.7KHZ
CN551		AEEMMB00703R	CONNECTOR	1	3PIN (RED)
D551		MA196-(TA5)	DIODE,SI	1	
Q551		2SD639-PQRS	TRANSISTOR,SI	1	
R551		ERDS2TJ681T	CARBON FILM RESISTOR	1	680Ω,1/4W,5%
R552		ERDS2TJ184T	CARBON FILM RESISTOR	1	180KΩ,1/4W,5%
R553		ERDS2TJ103T	CARBON FILM RESISTOR	1	10KΩ,1/4W,5%
REF NO. 119 NOISE FILTER (U)					
C1		ECQU2A224MNA	POLYESTER CAPACITOR	1	NE-2780 0.22MF,250V
C1,6		ECQU2A224MNA	POLYESTER CAPACITOR	2	NE-1880 0.22MF,250V
C2,3	⚠	ECKMNA332ME	CERAMIC CAPACITOR	2	0.0033MF,250V
CN1,3		A61163560BP	TERMINAL BOARD	2	NE-2680R,NE-2780
CN9		AEEMMD00703W	CONNECTOR	1	3PIN
D1		ERZC10DK621F	VARISTOR	1	
D2,3		ERZC10DK112R	VARISTOR	2	
F1,2		A6116-1740	TERMINAL BOARD	2	
F1,2		A62316010BP	FUSE HOLDER	4	
F3		A62316000GP	FUSE HOLDER	2	
L1		A621A3570CP	FILTER COIL	1	NE-2780
L1		A621A-1440	FILTER COIL	1	NE-1880

DIGITAL PROGRAMMER CIRCUIT

SCHEMATIC DIAGRAM





POWER SELECT SWITCH

S-356GP	S-359GP
○	—

DPC CIRCUIT (U)

	S-356GP	S-359GP
DISP1	—	○
DISP2	○	—
JPR1	○	—
R62,R63,R64, R65,R66,R67	470Ω	—
CN9	—	AEEM08FDZ8TV
CN10	AEEMMF03F06W	—

I V TRANSFORMER (U)

	S-356GP	S-357AP	S-359AP
T101	ETP57GJ681MN	ETP57GJ821NN	ETP57GJ821NN
F100	—	—	A62316000GP

PC BOARD Q (U)

S-356GP	S-356BP	S-358GP	S-356GP
○	○	—	—

PC BOARD B (U)

	S-356GP	S-356BP	S-358GP	S-360GP
JPR250	SHORT	6.2K	16K	OPEN
IC251,IC252	AEIGPS2505	AEIGPS2505	—	—
CN258,CN259 CN260,CN261	A6214-1700	A6214-1700	—	—
R251,R252 R257,R258	220K 1/2W	100K 1/2W	100K 1/2W	100K 1/2W
R253,R254 R255,R256	220K 1/2W	100K 1/2W	—	—
R266,R268 R270,R272	MA196	—	—	—
RY4,RY6 RY8,RY10	AEG5J1EM18B	—	—	—
RY5,RY7 RY12,RY13	AEG5J1EM18B	AEG5J1EM18B	—	—
RY15,RY16	—	AEG5J1EM18B	AEG5J1EM18B	AEG5J1EM18B

S-357 AP ②

DIGITAL PROGRAMMER CIRCUIT

PARTS LIST

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
C10,12,13,15, 16,17,19, 22,26,29	AECF50F104Z	CERAMIC CAPACITOR	10	0.1MF/50V
C11	ECA1HM221B	ELECTROLYTIC CAPACITOR,AL	1	220MF/50V
C14	ECEA1CKA100B	ELECTROLYTIC CAPACITOR,AL	1	10MF/16V
C18	ECEA1HKA2R2B	ELECTROLYTIC CAPACITOR,AL	1	2.2MF/50V
C20,21,23, 24,27,28	ECBT1E103ZF5	CERAMIC CAPACITOR	6	0.01MF/25V
C25	ECBT1H101KB5	CERAMIC CAPACITOR	1	0.0001MF/50V
C30,31,32,33	ECBT1H681KB5	CERAMIC CAPACITOR	4	680PF
CN1	AEEMMF00F04W	CONNECTOR	1	4PIN
CN2	AEEMMD1FF09W	CONNECTOR	1	9PIN
CN3	AEEMMD7FF11N	CONNECTOR	1	11PIN
CN4	AEEMMF01F05W	CONNECTOR	1	5PIN
CN5	AEEMMD07D07W	CONNECTOR	1	7PIN
CN6	AEEMMF00703W	CONNECTOR	1	3PIN
CN7	AEEMMF00703R	CONNECTOR	1	3PIN RED
CN8	AEEMB04BP0K	CONNECTOR	1	4PIN
CN9	AEEM08FDZ0TM	CONNECTOR	1	
CX1	EFOGC4194T4	RESONATOR	1	4.19MHZ
D10,11,13	AEDNERA1502	DIODE,SI	3	1.0A
D12,18,22, 23,24	MA700A-(TA)	DIODE,SI	5	MA700A 0.03A
D14,15,16, 17,19,20,21, 25	MA196-(TA5)	DIODE,SI	8	MA196 0.1A
DISP	A64563030GP	FLUORESCENT TUBE	1	CPF2408C
SPACER	A82843030GP	SPACER CUSHION	2	
IC1	AEIC38121113	IC	1	M38121
IC2	AEIC102977AN	IC	1	SN102977AN/AN6752
IC3	AEICAT24C04N	IC	1	AT24C04N
C4,5	AEICU2004GR	IC	2	A2004G
Q1	2SD2012	TRANSISTOR,SI,2W	1	3MHZ
Q2	2SA720PRTA	TRANSISTOR,SI,400MW	1	200MHZ
Q3,4,5,6	UN4124-(TA)	TRANSISTOR,SI,300MW	4	
Q7,8	2SC1318QSTA	TRANSISTOR,SI,400MW	2	200MHZ
Q9	UN4111-(TA)	TRANSISTOR,SI,300MW	1	
R10,11	ERDS2TJ151T	CARBON FILM RESISTOR	2	150Ω,1/4W,5%
R12,17,20, 21,22,24,25, 26,27,38,39, 40,46,47	ERDS2TJ103T	CARBON FILM RESISTOR	14	10KΩ,1/4W,5%
R13	ERDS2TJ823T	CARBON FILM RESISTOR	1	82KΩ,1/4W,5%
R14	ERDS2TJ390T	CARBON FILM RESISTOR	1	39Ω,1/4W,5%
R15,16	ERDS2TJ152T	CARBON FILM RESISTOR	2	1.5KΩ,1/4W,5%
R18	ERDS2TJ222T	CARBON FILM RESISTOR	1	2.2KΩ,1/4W,5%
R19	ERDS2TJ220T	CARBON FILM RESISTOR	1	22Ω,1/4W,5%
R23,28,29, 30,35,45,48, 51,56,57,58, 59,61	ERDS2TJ102T	CARBON FILM RESISTOR	19	1.0KΩ,1/4W,5%
R32,52,53, 54,55,60	ERDS2TJ104T	CARBON FILM RESISTOR	6	100KΩ,1/4W,5%
R34,36	ERDS2TJ333T	CARBON FILM RESISTOR	2	33KΩ,1/4W,5%
R37,42	ERDS2TJ332T	CARBON FILM RESISTOR	2	3.3KΩ,1/4W,5%

Ref. No.	Part No.	Description	Pcs/ Set	Remarks
R41	ERDS2TJ472T	CARBON FILM RESISTOR	1	4.7KΩ,1/4W,5%
ZD1	AEDZ4R7ES3T1	ZENER DIODE,SI	1	RD4.7ES3
ZD2	AEDZ5R6ES2T1	ZENER DIODE SI	1	RD5.6ES2
ZD3	AEDZ24ES3T1	ZENER DIODE,SI	1	RD24ES3

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